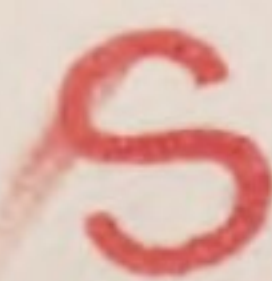


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RAMSDEN'S Engine.

Plate CCCCXXXIV

Fig. 2.

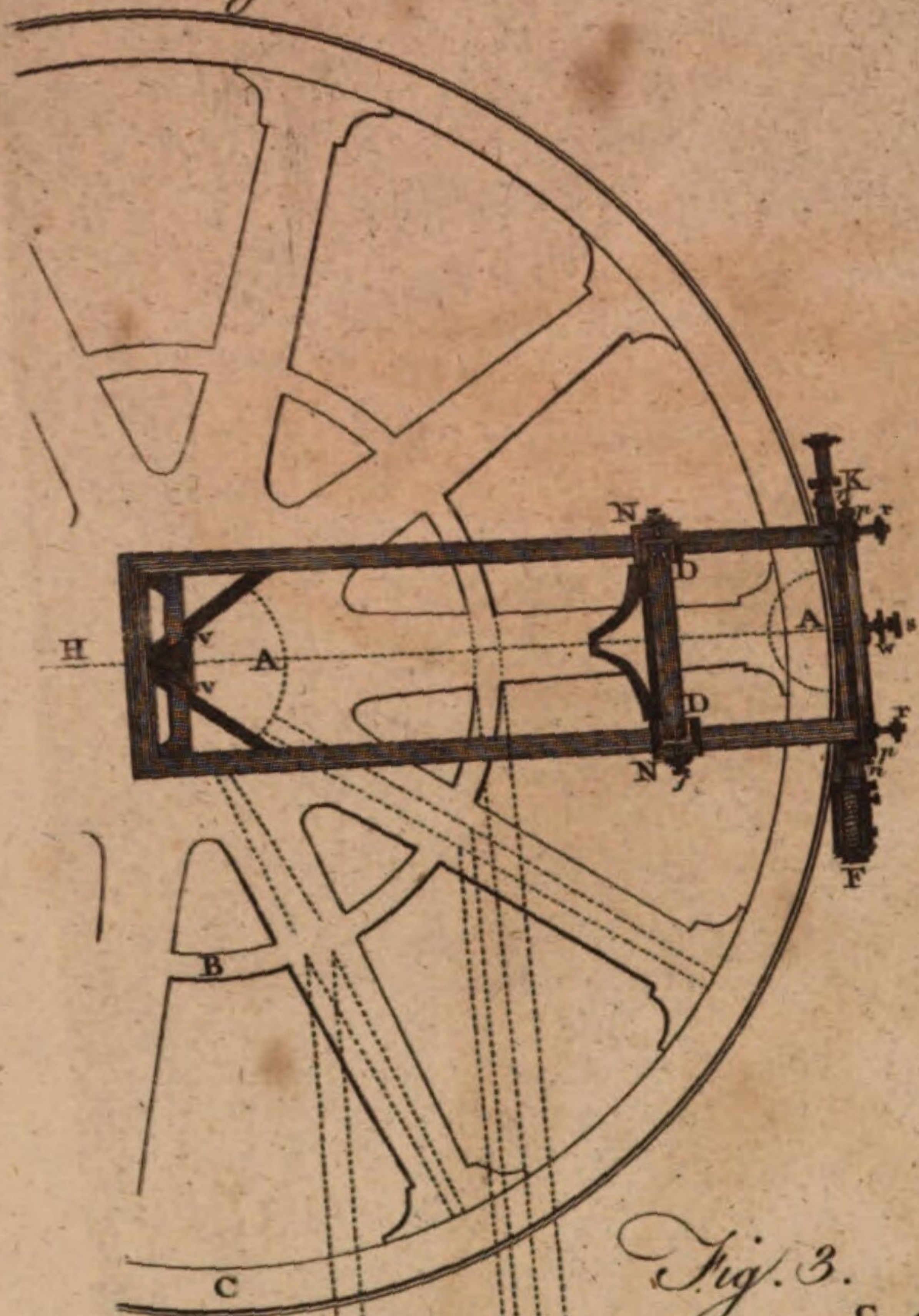


Fig. 3.

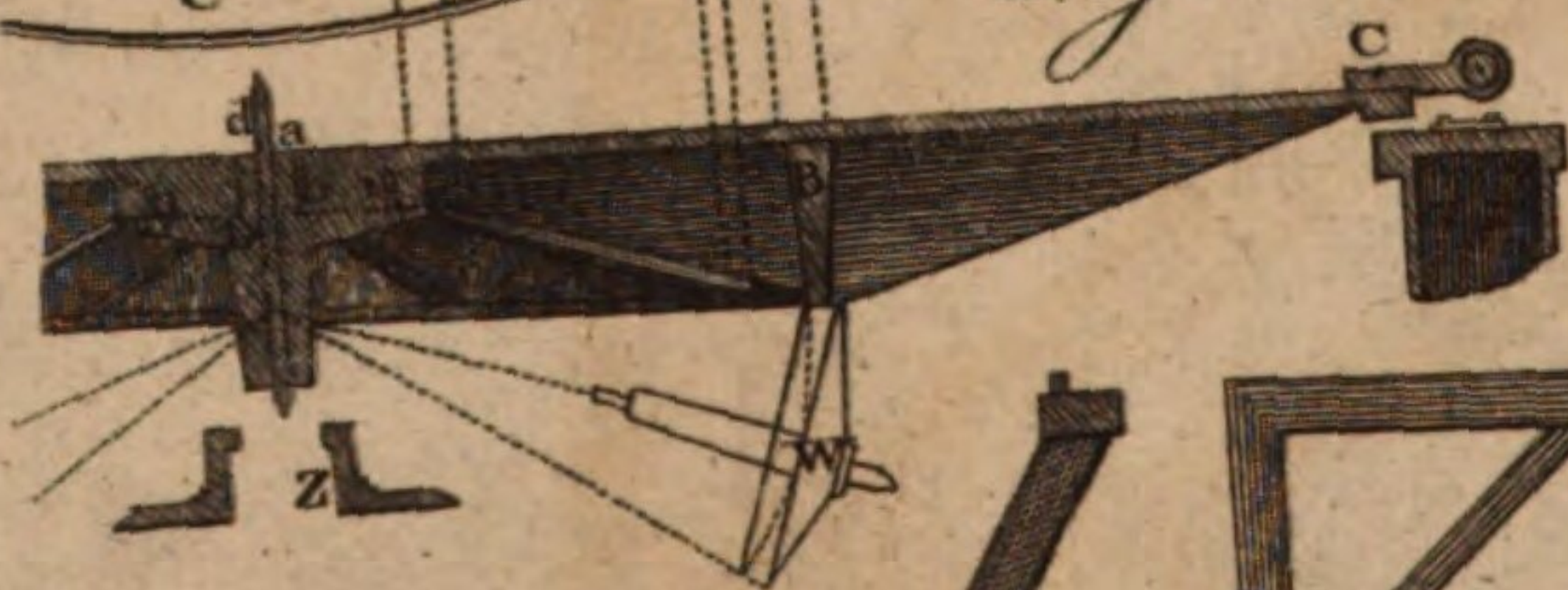


Fig. 7.

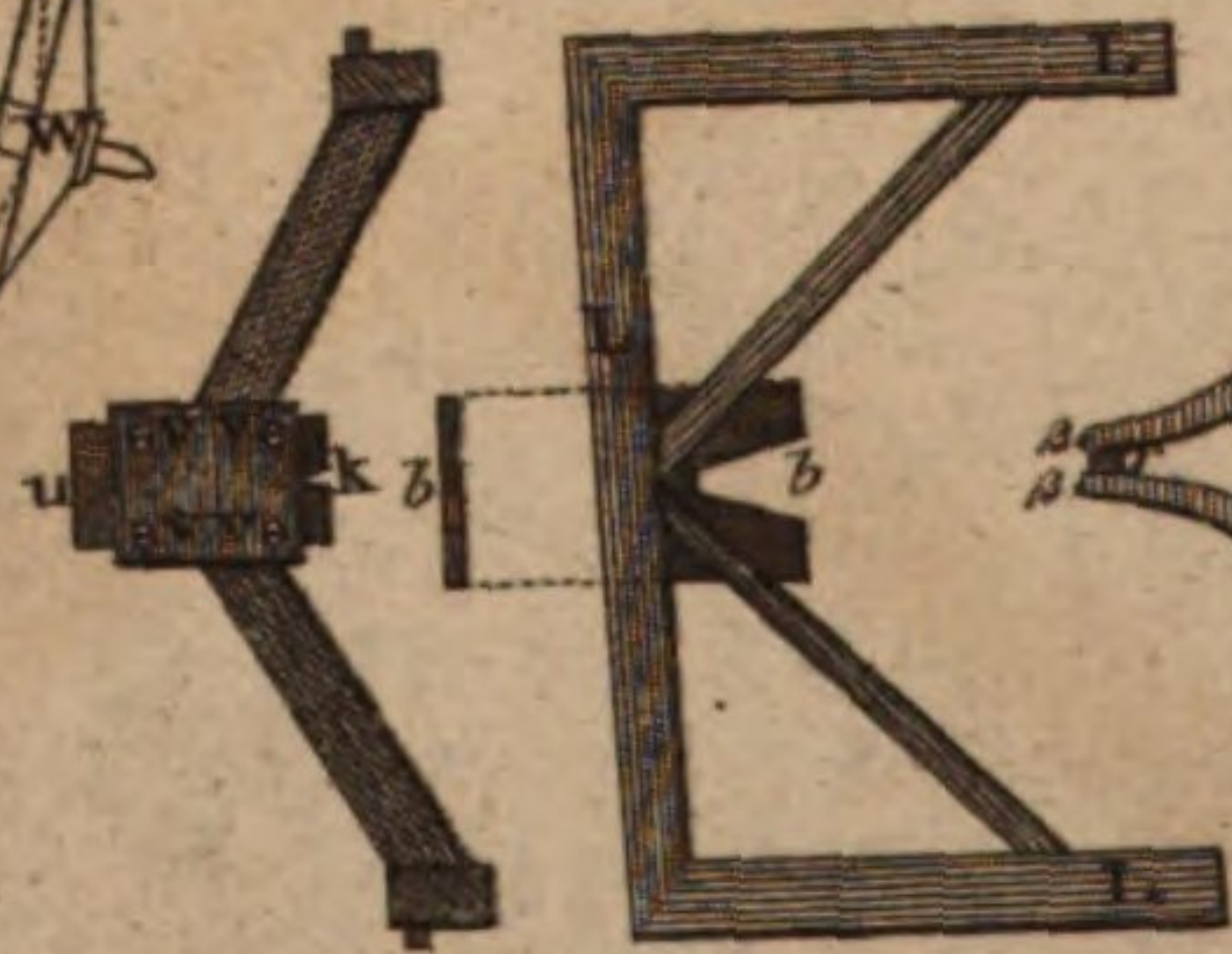


Fig. 6.



Fig. 9.

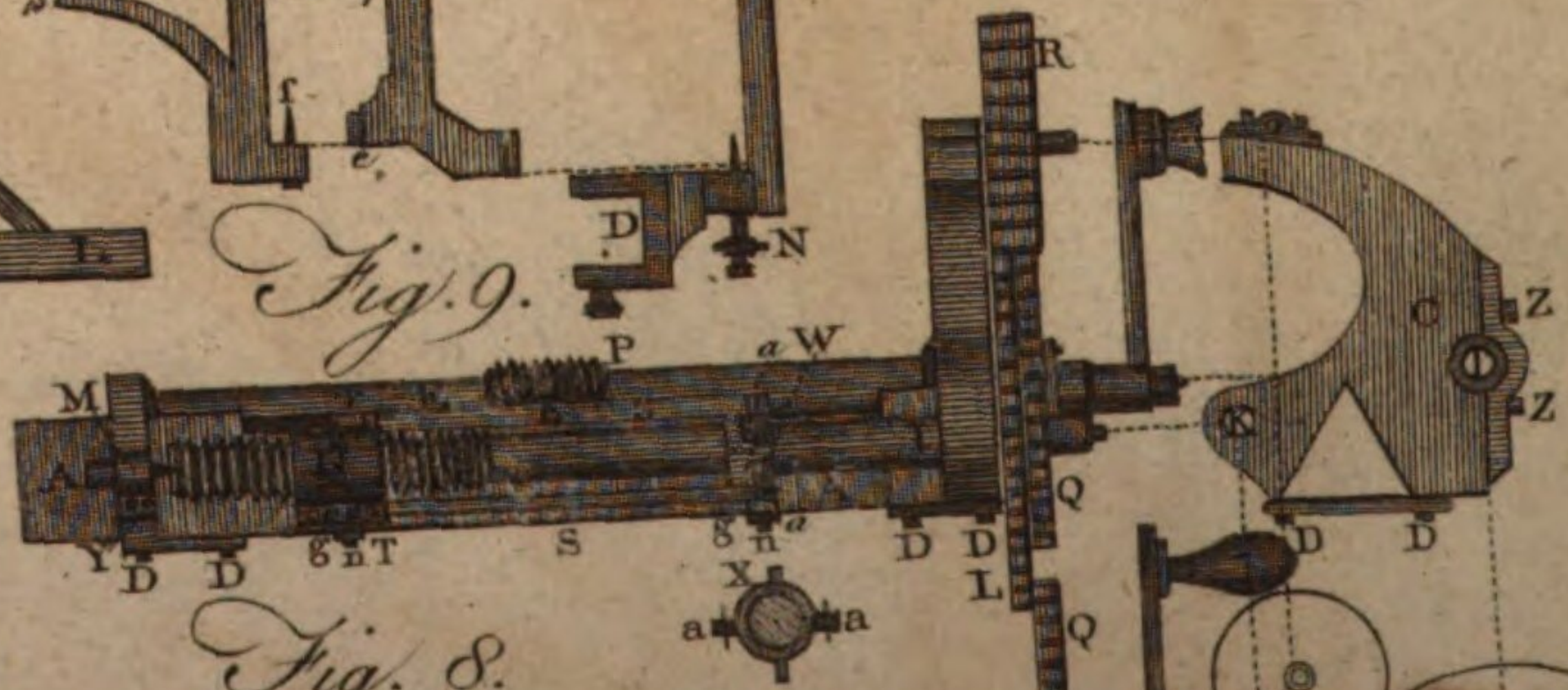
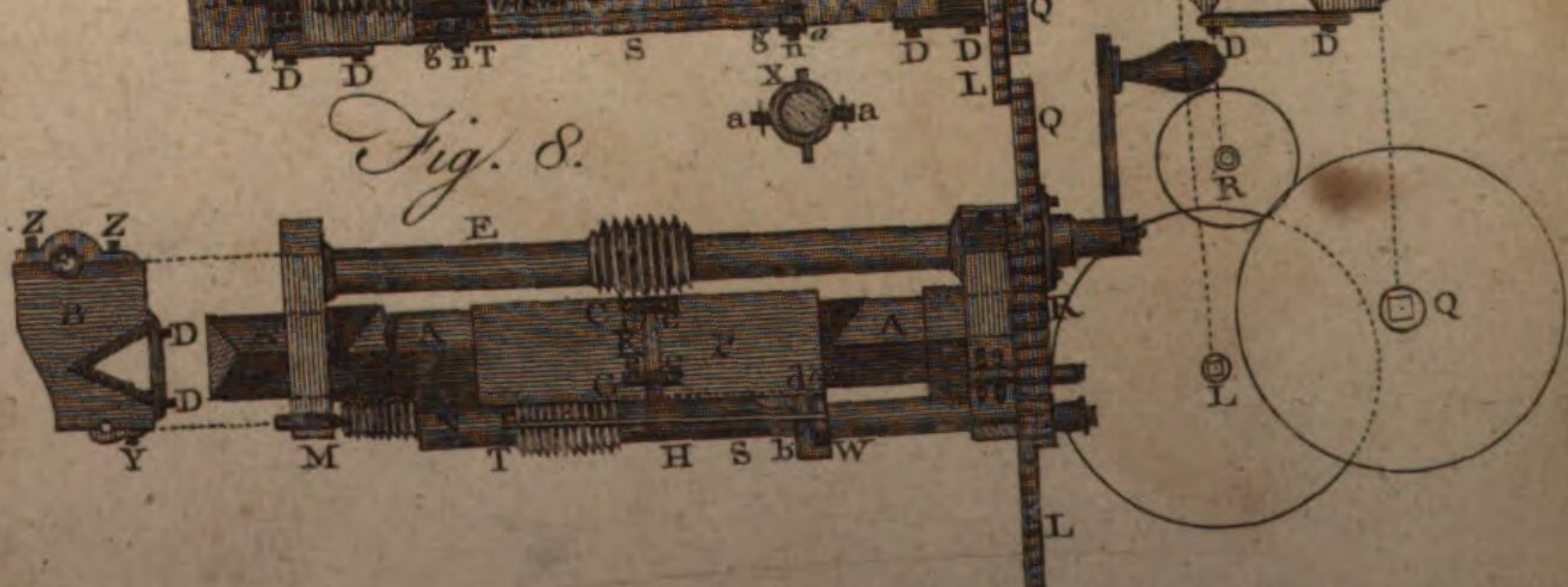


Fig. 8.



At Bell Prin. Wal. Sculptor fecit.

Fig. 4.

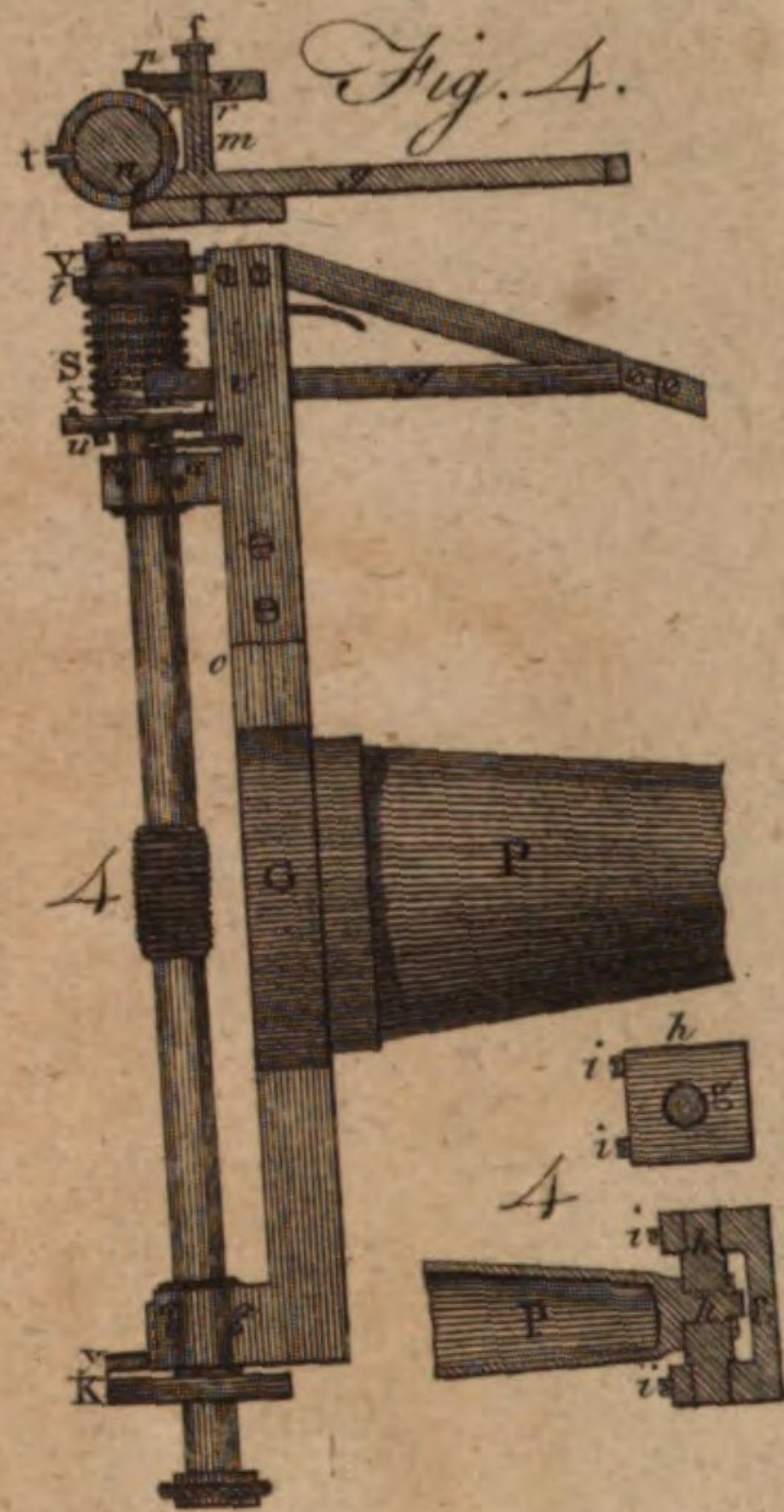
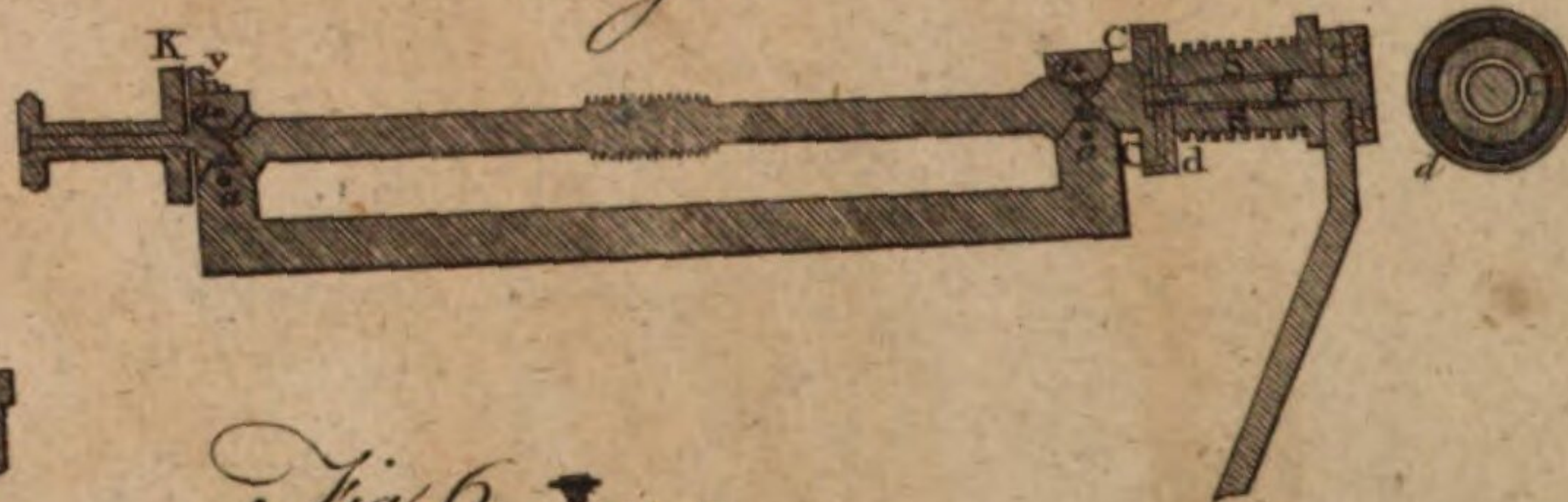


Fig. 5.



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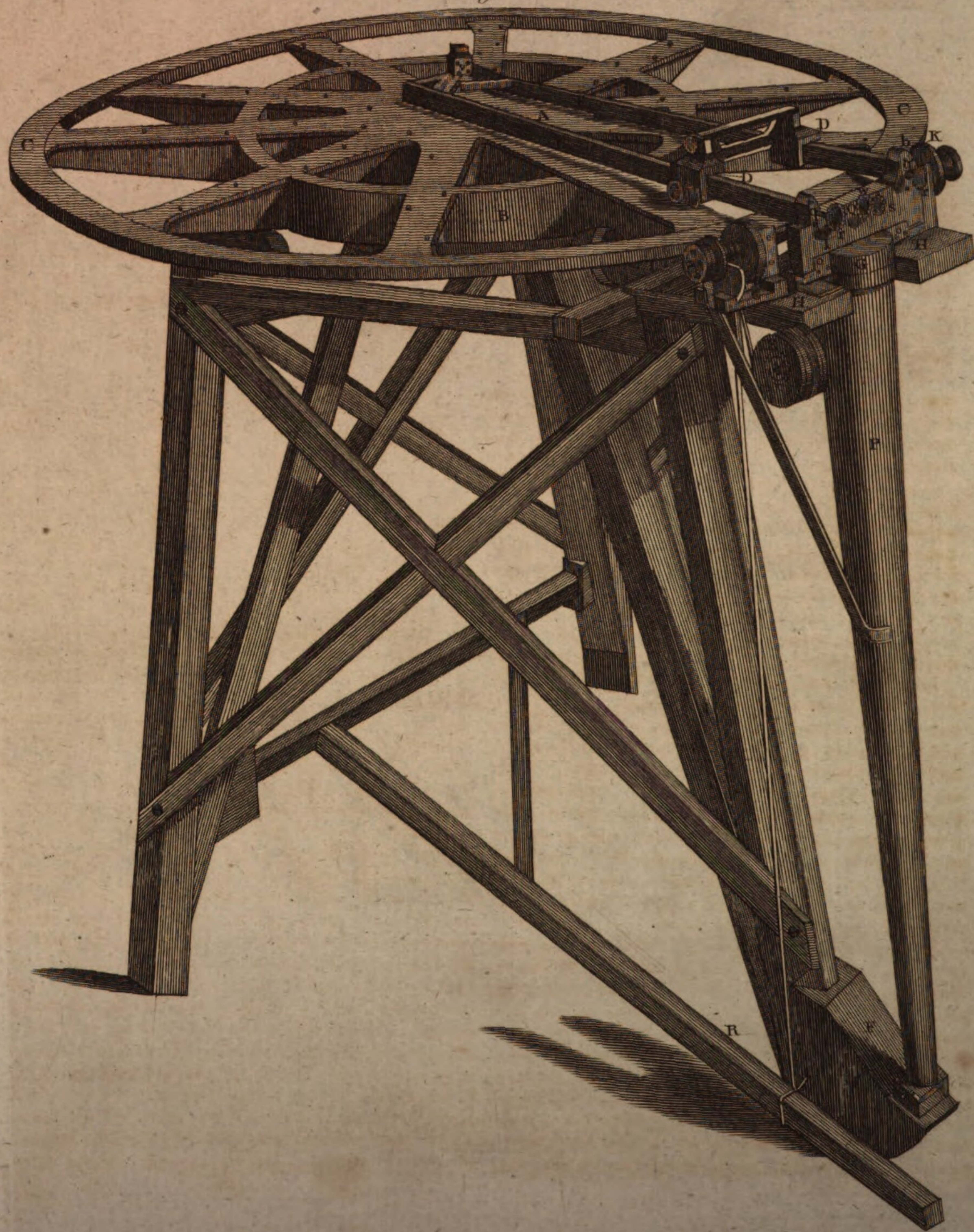
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RAMSDEN'S Machine.

Plate CCCCXXXIII.

for dividing Mathematical Instruments.
Fig. 1.



A. Bell Prin. W. A. Sculptor fecit.

ENCYCLOPÆDIA BRITANNICA.

R A N

Rana. **R**ANA, the frog, in zoology; a genus belonging to the order of amphibia reptilia. The body is naked, furnished with four feet, and without any tail. There are 17 species. The most remarkable are,

1. The temporaria, or common frog. This is an animal so well known, that it needs no description; but some of its properties are very singular.

Its spring, or power of taking large leaps, is remarkably great, and it is the best swimmer of all four-footed animals. Nature hath finely adapted its parts for those ends, the fore members of the body being very lightly made, the hind legs and thighs very long, and furnished with very strong muscles.

While in a tadpole state, it is entirely a water animal; the work of generation is performed in that element, as may be seen in every pond during spring, when the female remains oppressed by the male for a number of days.

The work of propagation is extremely singular, it being certain that the frog has not a *penis intrans*. There appears a strong analogy in this case between a certain class of the vegetable kingdom and those animals; for it is well known, that when the female frog deposits its spawn, the male instantaneously impregnates it with what we may call a *farina fecundans*, in the same manner as the palm-tree conveys fructification to the flowers of the female, which would otherwise be barren.

As soon as the frogs are released from their tadpole state, they immediately take to land; and if the weather has been hot, and there fall any refreshing showers, you may see the ground for a considerable space perfectly blackened by myriads of these animalcules, seeking for some secure lurking places. Some philosophers, not giving themselves time to examine into this phenomenon, imagined them to have been generated in the clouds, and showered on the earth; but had they, like our Derham, but traced them to the next pool, they would have found a better solution of the difficulty. See *Preternatural RAINS*.

As frogs adhere closely to the backs of their own species, so we know they will do the same by fish.—Walton mentions a strange story of their destroying pike; but that they will injure, if not entirely kill carp, is a fact indisputable, from the following relation. Not many years ago, on fishing a pond belonging to Mr Pitt of Encomb, Dorsetshire, great numbers of the carp were found each with a frog mounted on it, the hind legs clinging to the back, and the fore legs fixed in the corner of each eye of the fish, which were thin and greatly wasted, teized by carrying so disagree-

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R A N

able a load. These frogs Mr Pennant supposes to have been males disappointed of a mate.

The croaking of frogs is well known; and from that in fenny countries they are distinguished by ludicrous titles: thus they are styled *Dutch nightingales*, and *Boston waites*.

Yet there is a time of the year when they become mute, neither croaking nor opening their mouths for a whole month: this happens in the hot season, and that is in many places known to the country people by the name of the *paddock moon*. It is said, that during that period their mouths are so closed, that no force (without killing the animal) will be capable of opening them.

These, as well as other reptiles, feed but a small space of the year. The food of this genus is flies, insects, and snails. Toads are said to feed also on bees, and to do great injury to those useful insects.

During winter, frogs and toads remain in a torpid state: the last of which will dig into the earth, and cover themselves with almost the same agility as the mole. See *PHYSIOLOGY*, n° 48 and note (B), and n° 52.

2. The esculenta, or edible frog, differs from the former, in having a high protuberance in the middle of the back, forming a very sharp angle. Its colours are also more vivid, and its marks more distinct; the ground colour being a pale or yellowish green, marked with rows of black spots from the head to the rump.—This, and (Mr Pennant thinks) the former, are eaten. He has seen in the markets at Paris whole hampers full, which the venders were preparing for the table, by skinning and cutting off the fore-parts, the loins and legs only being kept; but his strong dislike to these reptiles prevented a close examination into the species.

3. In the country of Pennsylvania, and some other parts of North America, there is a very large species of frogs called the *bull-frog*, or *rana ocellata*. Their irides are of a dusky red, surrounded with a yellow ring. The auricles are covered with a thin circular skin, which forms a spot behind each eye. They have four toes on the fore-feet, and five palmated toes behind. Their colour is a dusky brown, mixed with yellowish green, and spotted with black. The belly is yellowish, and faintly spotted. These make a monstrous roaring noise like a bull, only somewhat more hoarse. Their size is superior to that of any other of the genus, and they can spring forward three yards at a leap. By this means they will equal in speed a very good horse in its swiftest course. Their places of abode are ponds, or bogs with stagnant water; but they never frequent streams. When many

A

of

Rana.

Rana.

of them are together, they make such a horrid noise, that two people cannot understand each other's speech. They croak all together, and then stop for a little and begin again. It seems as if they had a captain among them: for when he begins to croak, all the others follow; and when he stops, they also become silent. When this captain gives the signal for stopping, you hear a note like *poop* coming from him. In the day-time they seldom make any great noise, unless the sky is covered; but in the night-time they may be heard at the distance of a mile and an half. When they croak, they are commonly near the surface of the water, under the bushes, and have their heads out of the water. By going slowly, therefore, one may get up almost quite close to them before they go away. As soon as they are quite under water, they think themselves safe, though it be ever so shallow. These creatures kill and eat young ducklings and goslings, and sometimes carry off chickens that come too near the water; when beaten, they cry out almost like little children. As soon as the air begins to grow a little cool in autumn, they hide themselves under the mud in the bottom of stagnant waters, and lie there torpid during the winter. As soon as the weather grows mild towards summer, they begin to get out of their holes and croak. They are supposed by the people of Virginia to be the purifiers of waters, and are respected as the genii of the fountains. Some of them were brought to England alive several years ago.

4. The bufo, or toad, is the most deformed and hideous of all animals. The body is broad; the back flat, and covered with a pimply dusky hide; the belly large, swagging, and swelling out; the legs short, and its pace laboured and crawling; its retreat gloomy and filthy: in short, its general appearance is such as to strike one with disgust and horror. Yet it is said by those who have resolution to view it with attention, that its eyes are fine; to this it seems that Shakespeare alludes, when he makes his Juliet remark,

Some say the lark and loathed toad change eyes;
As if they would have been better bestowed on
charming a songster than on this raucous reptile.

But the hideous appearance of the toad is such as to make this one advantageous feature overlooked, and to have rendered it in all ages an object of horror, and the origin of most tremendous inventions. Aelian makes its venom so potent, that basilisk-like it conveyed death by its very look and breath; but Juvenal is content with making the Roman ladies who were weary of their husbands form a potion from its entrails, in order to get rid of the good man. This opinion begat others of a more dreadful nature; for in after-times superstition gave it preternatural powers, and made it a principal ingredient in the incantations of nocturnal hags.

This animal was believed by some old writers to have a stone in its head fraught with great virtues medical and magical: it was distinguished by the name of the reptile, and called the *toad-stone*, *bufonites*, *crapaudine*, *krottenstein*; but all its fancied powers vanished on the discovery of its being nothing but the fossil-tooth of the sea-wolf †, or of some other flat-toothed

† See *Anon. abicus*.

fish, not unfrequent in our island as well as several other countries.

Rana.

But these fables have been long exploded. And as to the notion of its being a poisonous animal, it is probable that its excessive deformity, joined to the faculty it has of emitting a juice from its pimples, and a dusky liquid from its hind parts, is the foundation of the report.

That it has any noxious qualities there seem to have been no proofs in the smallest degree satisfactory, tho' we have heard many strange relations on that point.— On the contrary, there have been many who have taken them in their naked hands, and held them long without receiving the least injury: it is also well known that quacks have eaten them, and have besides squeezed their juices into a glass and drank them with impunity. We may say also, that these reptiles are a common food to many animals; to buzzards, owls, Norfolk plovers, ducks, and snakes, who would not touch them were they in any degree noxious.

So far from having venomous qualities, they have of late been considered as if they had beneficent ones; particularly in the cure of the most terrible of diseases, the *cancer*, by suction: (See *British Zoology*, vol. iii. Append. p. 389, *et seq.*) But, from all circumstances, as Mr Pennant observes, they seem only to have rendered a horrible complaint more loathsome.

The most full information concerning the nature and qualities of this animal is contained in the following letters from Mr Arscott and Mr Pittfield to Dr Milles. "It would give me great pleasure (says Mr Arscott) to be able to inform you of any particulars worthy Mr Pennant's notice, concerning the toad who lived so many years with us, and was so great a favourite. The greatest curiosity in it was its becoming so remarkably tame. It had frequented some steps before the hall-door some years before my acquaintance commenced with it, and had been admired by my father for its size (which was of the largest I ever met with), who constantly paid it a visit every evening. I knew it myself above 30 years; and by constantly feeding it, brought it to be so tame, that it always came to the candle, and looked up as if expecting to be taken up and brought upon the table, where I always fed it with insects of all sorts; it was fondest of flesh maggots, which I kept in bran; it would follow them, and, when within a proper distance, would fix its eye, and remain motionless for near a quarter of a minute, as if preparing for the stroke, which was an instantaneous throwing its tongue at a great distance upon the insect, which stuck to the tip by a glutinous matter: the motion is quicker than the eye can follow (A).

"I always imagined that the root of its tongue was placed in the forepart of its under jaw, and the tip towards its throat, by which the motion must be a half circle; by which, when its tongue recovered its situation, the insect at the tip would be brought to the place of deglutition. I was confirmed in this by never observing any internal motion in its mouth, excepting one swallow the instant its tongue returned. Possibly I might be mistaken; for I never dissected one, but contented

(A) This rapid capture of its prey might give occasion to the report of its fascinating powers, Linnaeus says, *Insecta in fauces fascino revocat.*

Rana. tented myself with opening its mouth, and slightly inspecting it.

"You may imagine, that a toad, generally detested, (although one of the most inoffensive of all animals), so much taken notice of and befriended, excited the curiosity of all comers to the house, who all desired to see it fed; so that even ladies so far conquered the horrors instilled into them by nurses, as to desire to see it. This produced innumerable and improbable reports, making it as large as the crown of a hat, &c. &c."

The following are answers from the same gentleman to some queries proposed by Mr Pennant.

"*First*, I cannot say how long my father had been acquainted with the toad before I knew it; but when I first was acquainted with it, he used to mention it as the old toad I've known so many years; I can answer for 36 years.

"*Secondly*, No toads that I ever saw appeared in the winter season. The old toad made its appearance as soon as the warm weather came, and I always concluded it retired to some dry bank to repose till the spring. When we new-lay'd the steps, I had two holes made in every third step, with a hollow of more than a yard long for it, in which I imagine it slept, as it came from thence at its first appearance.

"*Thirdly*, It was seldom provoked: neither that toad, nor the multitudes I have seen tormented with great cruelty, ever showed the least desire of revenge, by spitting or emitting any juice from their pimples.— Sometimes, upon taking it up, it would let out a great quantity of clear water, which, as I have often seen it do the same upon the steps when quite quiet, was certainly its urine, and no more than a natural evacuation.

"*Fourthly*, A toad has no particular enmity for the spider; he used to eat five or six with his millepedes (which I take to be its chief food) that I generally provided for it before I found out that flesh maggots, by their continual motion, was the most tempting bait;

but, when offered, it eat blowing flies and humble bees that come from the rat-tailed maggot in gutters, or in short any insect that moved. I imagine, if a bee was to be put before a toad, it would certainly eat it to its cost; but as bees are seldom stirring at the same time that toads are, they can seldom come in their way, as they seldom appear after sun-rising or before sun-set. In the heat of the day they will come to the mouth of their hole, I believe, for air. I once from my parlour window observed a large toad I had in the bank of a bowling-green, about 12 at noon, a very hot day, very busy and active upon the grass; so uncommon an appearance made me go out to see what it was, when I found an innumerable swarm of winged ants had dropped round his hole, which temptation was as irresistible as a turtle would be to a luxurious alderman.

"*Fifthly*, Whether our toad ever propagated its species, I know not; rather think not, as it always appeared well, and not lessened in bulk, which it must have done, I should think, if it had discharged so large a quantity of spawn as toads generally do. The females that are to propagate in the spring, I imagine, instead of retiring to dry holes, go into the bottom of ponds, and lie torpid among the weeds: for to my great surprise, in the middle of the winter, having for amusement put a long pole into my pond, and twisted it till it had gathered a large volume of weed, on taking it off I found many toads; and having cut some asunder with my knife, by accident, to get off the weed, found them full of spawn not thoroughly formed. I am not positive, but think there were a few males in March; I know there are 30 males (B) to one female, 12 or 14 of whom I have seen clinging round a female: I have often disengaged her, and put her to a solitary male, to see with what eagerness he would seize her. They impregnate the spawn as it is drawn (C) out in long strings, like a necklace, many yards long, not in a large quantity of jelly, like frogs spawn.

A 2

Sixthly,

(B) Mr John Hunter has assured me, that during his residence at Belleisle, he dissected some hundreds of toads, yet never met with a single female among them.

(C) I was incredulous as to the *obstetrical* offices of the male toad; but since the end is so well accounted for, and the fact established by such good authority, belief must take place.

Mr Demours, in the Memoirs of the French Academy, as translated by Dr Templeman, vol. i. p. 371, has been very particular in respect to the male toad as acting the part of an *accoucheur*: His account is curious, and claims a place here.

"In the evening of one of the long days in summer, Mr Demours, being in the king's garden, perceived two toads coupled together at the edge of an hole, which was formed in part by a great stone at the top.

"Curiosity drew him to see what was the occasion of the motions he observed, when two facts equally new surprised him. The *first* was the extreme difficulty the female had in laying her eggs, inasmuch that she did not seem capable of being delivered of them without some assistance. The *second* was, that the male was mounted on the back of the female, and exerted all his strength with his hinder feet in pulling out the eggs, whilst his fore-feet embraced her breast.

"In order to apprehend the manner of his working in the delivery of the female, the reader must observe, that the paws of these animals, as well those of the fore-feet as of the hinder, are divided into several toes, which can perform the office of fingers.

"It must be remarked likewise, that the eggs of this species of toads are included each in a membranous coat that is very firm, in which is contained the embryo; and that these eggs, which are oblong and about two lines in length, being fastened one to another by a short but very strong cord, form a kind of chaplet, the beads of which are distant from each other about the half of their length. It is by drawing this cord with his paw that the male performs the function of a midwife, and acquits himself in it with a dexterity that one would not expect from so lumpish an animal.

"The presence of the observer did not a little discompose the male: for some time he stopped short, and threw

Rana.

"Sixthly, Insects being their food, I never saw any toad show any liking or dislike to any plant (p).

"Seventhly, I hardly remember any persons taking it up except my father and myself; I do not know whether it had any particular attachment to us.

"Eighthly, In respect to its end, I answer this last query. Had it not been for a tame raven, I make no doubt but it would have been now living; who one day seeing it at the mouth of its hole, pulled it out, and although I rescued it, pulled out one eye, and hurt it so, that notwithstanding its living a twelvemonth it never enjoyed itself, and had a difficulty of taking its food, missing the mark for want of its eye: before that accident it had all the appearance of perfect health."

6. The rubeta, or natter-jack, frequents dry and sandy places: it is found on Putney common, and also near Revesby abbey, Lincolnshire. It never leaps, neither does it crawl with the slow pace of a toad, but its motion is liker to running. Several are found commonly together, and like others of the genus they appear in the evenings. The upper part of the body is of a dirty yellow, clouded with brown, and covered with porous pimples of unequal sizes: on the back is a yellow line. The upper side of the body is of a paler hue, marked with black spots, which are rather rough. On the fore-feet are four divided toes; on the hind five, a little webbed. The length of the body is two inches and a quarter; the breadth, one and a quarter: the length of the fore-legs, one inch one-sixth; of the hind legs, two inches. We are indebted to Sir Joseph Banks, for this account.

7. The pipal, or Surinam toad, is more ugly than even the common one. The body is flat and broad; the head small; the jaws, like those of a mole, are extended, and evidently formed for rooting in the ground: the skin of the neck forms a sort of wrinkled collar: the colour of the head is of a dark chestnut, and the eyes are small: the back, which is very broad, is of a lightish grey, and seems covered over with a number of small eyes, which are round, and placed at nearly equal distances. These eyes are very different from what they seem: they are the animal's eggs, covered with their shells, and placed there for hatching. These eggs are buried deep in the skin, and in the beginning of incubation but just appear; and are very visible when the young animal is about to burst from its confinement. They are of a reddish, shining yellow colour; and the spaces between them are full of small warts, resembling pearls.

This is their situation previous to their coming forth; but nothing so much demands our admiration as the

manner of their production. The eggs, when formed in the ovary, are sent, by some internal canals, which anatomists have not hitherto described, to lie and come to maturity under the bony substance of the back: in this state they are impregnated by the male, whose seed finds its way by pores very singularly contrived, and pierces not only the skin but the periosteum: the skin, however, is still apparently entire, and forms a very thick covering over the whole brood; but as they advance to maturity, at different intervals, one after another, the egg seems to start forward, and burgesons from the back, becomes more yellow, and at last breaks; when the young one puts forth its head: it still, however, keeps its situation until it has acquired a proper degree of strength, and then it leaves the shell, but still continues to keep upon the back of the parent. In this manner the pipal is seen travelling with her wondrous family on her back, in all the different stages of maturity. Some of the strange progeny, not yet come to sufficient-perfection, appear quite torpid, and as yet without life in the egg: others seem just beginning to rise through the skin; here peeping forth from the shell, and there having entirely forsaken their prison: some are sporting at large upon the parent's back, and others descending to the ground to try their own fortune below. The male pipal is every way larger than the female, and has the skin less tightly drawn round the body. The whole body is covered with pustules, resembling pearls; and the belly, which is of a bright yellow, seems as if it were sewed up from the throat to the vent, a seam being seen to run in that direction. This animal, like the rest of the frog kind, is most probably harmless.

8. The water frog of Catesby has large black eyes, yellow irides, and long limbs: the upper part of the head and body is of a dusky green, spotted with black; and from each eye to the nose is a white line; and also a yellow line along the sides to the rump. They frequent rivulets and ditches, which they do not quit for the dry land. It is said they will spring five or six yards at a leap.

9. The rana arborea, or green tree frog of Catesby, is of a slender shape and bright green colour, marked on each side with a line of yellow: the eyes are black; the irides yellow; they have four toes before and five behind; at the end of each toe there is a round membrane, concave beneath, and not unlike the mouth of a leech. They lurk under the lower sides of leaves, even of the tallest trees, and adhere firmly, by means of the membranes at the ends of their toes, sticking to the smoothest surface: a looking-glass was held before one, at

threw on the curious impertinent a fixed look that marked his disquietness and fear; but he soon returned to his work with more precipitation than before, and a moment after he appeared undetermined whether he should continue it or not. The female likewise discovered her uneasiness at the sight of the stranger, by motions that interrupted sometimes the male in his operation. At length, whether the silence and steady posture of the spectator had dissipated their fear, or that the case was urgent, the male resumed his work with the same vigour, and successfully performed his function."

(p) This question arose from an assertion of Linnæus, that the toad delighted in filthy herbs. *Delectatur cotula, aclea, flachyde fæide.* The unhappy deformity of the animal seems to be the only ground of this as well as another misrepresentation, of its conveying a poison with its pimples, its touch, and even its breath. *Verrucæ laciæcentes venenatæ infusæ tactu, anhelitu.*

Ranal at four yards distance; it reached it at one leap, and stuck closely to it. At night these frogs make an incessant chirping, and leap from spray to spray in search of insects. This species is common to America and the warmer parts of Europe.

10. The land frog of Catesby has much the appearance of a toad: above it is grey or brown, spotted with dusky; below white, faintly spotted; the irides are red; and the legs short. They frequent the high-lands, and are seen most frequently in wet weather and in the hottest time of the day: they leap, feed on insects, particularly the fire-fly and ant. Sometimes the Americans bake and reduce this species to powder, which, mixed with orrice root, is taken as a cure for a tympany.

11. The cinereous frog has a gibbous, cinereous, and smooth back; the belly is yellow and granulated: on each side, from the nose to the rump, there is a white line; and there is the same on the outside of the thighs and legs; the toes are bullated at their ends. They inhabit Carolina.

RANAI, one of the Sandwich islands discovered by Captain Cooke, is about nine miles distant from Mowee and Morotoi, and is situated to the south-west of the passage between those two isles. The country towards the south is elevated and craggy; but the other parts of the island had a better appearance, and seemed to be well inhabited. It abounds in roots, such as sweet potatoes, *taro*, and yams; but produces very few plants and bread-fruit trees. The south point of Ranai is in the latitude of $20^{\circ} 46'$ north, and in the longitude of $203^{\circ} 8'$ east.

RANCID, denotes a fatty substance that is become rank or musty, or that has contracted an ill smell by being kept close.

RANDIA, in botany: A genus of the monogynia order, belonging to the pentandria class of plants; and in the natural method ranking with those of which the order is doubtful. The calyx is monophyllous; the corolla salver-shaped; the berry unilocular, with a capsular rind. There are two species, viz. the *mitis* and *aculeata*.

RANDOLPH (Thomas), an eminent English poet in the 17th century, was born in Northamptonshire 1605. He was educated at Westminster and Cambridge, and very early distinguished for his excellent genius; for at about nine or ten years of age he wrote the History of the Incarnation of our Saviour in verse. His subsequent writings established his character, and gained him the esteem and friendship of some of the greatest men of that age, particularly of Ben Johnson, who adopted him one of his sons in the muses. He died in 1634, and was honourably interred. He wrote, 1. *The Muses Look-*

ing-glass, a comedy. 2. *Amyntas, or the Impossible Dowry*, a pastoral, acted before the king and queen. 3. *Aristippus, or the Jovial Philosopher*. 4. *The Conceited Pedlar*. 5. *The Jealous Lovers*, a comedy. 6. *Hey for Honesty, down with Knavery*, a comedy; and several poems.

RANDOM SHOT, in gunnery, is a shot made when the muzzle of a gun is raised above the horizontal line, and is not designed to shoot directly or point-blank.

The utmost random of any piece is about ten times as far as the bullet will go point-blank. The bullet will go farthest when the piece is mounted to about 45° above the level range. See **GUNNERY** and **PROJECTILES**.

RANGE, in gunnery, the path of a bullet, or the line it describes from the mouth of the piece to the point where it lodges. If the piece lie in a line parallel to the horizon, it is called the *right* or *level range*: if it be mounted to 45° , it is said to have the *utmost range*; all others between 00 and 45° are called the *intermediate ranges*.

RANGER, a sworn officer of a forest, appointed by the king's letters patent; whose business is to walk through his charge, to drive back the deer out of the purviews, &c. and to present all trespasses within his jurisdiction at the next forest-court.

RANK, the order or place assigned a person suitable to his quality or merit.

RANK, is a straight line made by the soldiers of a battalion or squadron, drawn up side by side: this order was established for the marches, and for regulating the different bodies of troops and officers which compose an army.

RANK and Precedence, in the army and navy, are as follow:

Engineers RANK. Chief, as colonel; director, as lieutenant-colonel; sub-director, as major; engineer in ordinary, as captain; engineer extraordinary, as captain-lieutenant; sub-engineer, as lieutenant; practitioner-engineer, as ensign.

Navy RANK. Admiral, or commander in chief of his majesty's fleet, has the rank of a field-marshal; admirals, with their flags on the main-top-mast-head, rank with generals of horse and foot; vice-admirals, with lieutenant-generals; rear-admirals, as major-generals; commodores, with broad pendants, as brigadier-generals; captains of post-ships, after three years from the date of their first commission, as colonels; other captains, as commanding post-ships, as lieutenant-colonels; captains, not taking post, as majors; lieutenants, as captains.

Random
Rank.

RANK between the Army, Navy, and Governors.

Rank
||
Ranuncu-
lus.

Ranuncu-
lus.

ARMY.	NAVY.	GOVERNORS.
General in chief	Admiral in chief	Commander in chief of the forces in America
Generals of horse	Admiral with a flag at the main-top-mast	Captain-general of provinces
Lieutenant-generals	Vice-admirals	Lieutenant-generals of provinces
Major-generals	Rear-admirals	Lieutenant-governors and presidents
Colonels	Post-captains of 3 years	Lieutenant-governors not commanding
Lieutenant-colonels	Post-captains	Governors of charter colonies
Majors	Captains	Deputy-governors
Captains	Lieutenants	Established by the king, 1760

Doubling of the RANKS, is the placing two ranks in one, frequently used in the manœuvres of a regiment.

RANKS and Files, are the horizontal and vertical lines of soldiers when drawn up for service.

RANSOM, a sum of money paid for the redemption of a slave, or the liberty of a prisoner of war. In our law-books, ransom is also used for a sum paid for the pardon of some great offence, and to obtain the offender's liberty.

RANULA, a tumor under a child's tongue, which, like a ligature, hinders it from speaking or sucking.

RANUNCULUS, CROWFOOT: A genus of the polygamia order, belonging to the polyandria class of plants; and in the natural method ranking under the 26th order, *Multifiliæ*. The calyx is pentaphyllous; there are five petals, each with a melliferous pore on the inside of the heel; the seeds naked.

Species. There are near 40 different species of this genus, six or eight of which claim general esteem as flowery plants for ornamenting the gardens, and a great number are common weeds in the fields, waters, and pasture ground, not having merit for garden culture. Of the garden kinds, the principal sort is the Asiatic or Turkey and Persian ranunculus, which comprises many hundred varieties of large, double, most beautiful flowers of various colours: but several other species having varieties with fine double flowers, make a good appearance in a collection, though as those of each species consist only of one colour, some white, others yellow, they are inferior to the Asiatic ranunculus, which is large, and diversified a thousand ways in rich colours, in different varieties. However, all the garden kinds in general effect a very agreeable diversity in assemblage in the flower compartments, &c. and they being all very hardy, succeed in any open beds and borders, &c.

Culture. The Asiatic species in all its varieties will succeed in any light, rich, garden earth; but the florists often prepare a particular compost for the fine varieties, consisting of good garden-mould or pasture-earth, sward and all, a fourth part of rotted cow-dung, and the like portion of sea-sand; and with this they

prepare beds four feet wide and two deep: however, in default of such compost, use beds of any good light earth of your garden; or, if necessary, it may be made light and rich with a portion of drift-sand and rotten dung, cow-dung is most commonly recommended; but they will also thrive in beds of well-wrought kitchen-garden earth, and they often prosper well in the common flower-borders.

The season for planting the roots is both in autumn and spring; the autumn plantings generally flower strongest and soonest by a month at least, and are succeeded by the spring-planting in May and June. Perform the autumnal planting in October and early part of November, but some plant towards the latter end of September in order to have a very early bloom; but those planted in that month and beginning of October often come up with rank leaves soon after, in winter, so as to require protection in hard frosts; those, however, planted about the middle or latter end of October, and beginning of November, rarely shoot up strong till towards spring, and will not require so much care of covering during winter; and the spring-planting may be performed the end of January or beginning of February, or as soon as the weather is settled; they will not require any trouble of covering, and will succeed the autumnal plants regularly in bloom, and will flower in good perfection. Thus by two or three different plantings you may obtain a succession of these beautiful flowers in constant bloom from April till the middle of June; but the autumnal plants, for the general part, not only flower strongest, but the roots increase more in size, and furnish the best off-sets for propagation: it is, however, proper to plant both in spring and autumn.

Prepare for the choicer sorts four-feet beds of light earth, and rake the surface smooth: then plant the roots in rows lengthwise the beds, either by drilling them in two inches deep, and six inches distance in the row, and the rows six or eight asunder; or you may plant them by bedding-in, or by dibble-planting, the same depth and distance.

Those designed for the borders should be planted generally

Ranuncu-
lus
Rape.

nerally towards the spring, in little clumps or patches, three, four, or five roots in each, putting them in either with a dibble or trowel, two or three inches deep, and three or four asunder in each patch, and the patches from about three to five or ten feet distance, placing them rather forward in the border.

Propagation. All the varieties of the Asiatic ranunculus propagate abundantly by off-sets from the root, and new varieties are gained by seed.—1. By off-sets. The time for separating the off-sets is in summer when the flower is past, and the leaves and stalks are withered: then taking up all the roots in dry weather, separate the off-sets from each main root, and after drying the whole gradually in some shady airy room, put them up in bags till the autumn and spring seasons of planting; then plant them as before, placing all the off-sets in separate beds: many of them will blow the first year, but in the second they will all flower in good perfection.—2. By seed. Save a quantity of seed from the finest semi-double flowers, and sow it either in August, or in March, or April, though, to save trouble of winter-covering, some prefer the spring: it should be sowed in light rich mould, either in pots or in an east border, drawing very shallow flat drills five or six inches asunder, in which sow the seeds thinly, and cover them lightly with earth, giving frequent refreshments of water in dry weather, and in a month or six weeks the plants will rise with small leaves; observing to continue the light waterings in dry weather, to preserve the soil moist during their summer's growth to increase the size of the roots; and in June when the leaves decay, take up the roots and preserve them till the season for planting, then plant them in common beds, as before directed, and they will flower the spring following, when all the doubles of good properties should be marked, and the singles thrown away.

The juice of many species of ranunculus is so acrid as to raise blisters on the skin, and yet the roots may be eaten with safety when boiled.

RAPACIOUS ANIMALS, are such as live upon prey.

RAPE, in law, the carnal knowledge of a woman forcibly and against her will. This, by the Jewish law, was punished with death, in case the damsel was betrothed to another man: and, in case she was not betrothed, then a heavy fine of fifty shekels was to be paid to the damsel's father, and she was to be the wife of the ravisher all the days of his life; without that power of divorce, which was in general permitted by the Mosiac law.

The civil law punishes the crime of ravishment with death and confiscation of goods: under which it includes both the offence of forcible abduction, or taking away a woman from her friends; and also the present offence of forcibly dishonouring her; either of which, without the other, is in that law sufficient to constitute a capital crime. Also the stealing away a woman from her parents or guardians, and debauching her, is equally penal by the emperor's edict, whether she consent or is forced. And this, in order to take away from women every opportunity of offending in this way; whom the Roman laws suppose never to go astray without the seduction and arts of the other sex; and therefore, by restraining and making so highly penal the solicitations of the men, they meant to secure effectually the honour

of the women. But our English law does not entertain quite such sublime ideas of the honour of either sex, as to lay the blame of a mutual fault upon one of the transgressors only; and therefore makes it a necessary ingredient in the crime of rape, that it must be against the woman's will.

Rape was punished by the Saxon laws, particularly those of king Athelstan, with death; which was also agreeable to the old Gothic or Scandinavian constitution. But this was afterwards thought too hard: and in its stead another severe, but not capital, punishment was inflicted by William the Conqueror, viz. castration and loss of eyes; which continued till after Bracton wrote, in the reign of Henry III. But in order to prevent malicious accusations, it was then the law, (and, it seems, still continues to be so in appeals of rape), that the woman should, immediately after, go to the next town, and there make discovery to some credible persons of the injury she has suffered; and afterwards should acquaint the high constable of the hundred, the coroners, and the sheriff, with the outrage. This seems to correspond in some degree with the laws of Scotland and Arragon, which require that complaint must be made within 24 hours: though afterwards by statute Westm. 1. c. 13. the time of limitation in England was extended to 40 days. At present there is no time of limitation fixed: for, as it is usually now punished by indictment at the suit of the king, the maxim of law takes place, that "nullum tempus occurrit regi:" but the jury will rarely give credit to a stale complaint. During the former period also it was held for law, that the woman (by consent of the judge and her parents) might redeem the offender from the execution of his sentence, by accepting him for her husband; if he also was willing to agree to the exchange, but not otherwise.

In the 3 Edw. I. by the statute Westm. 1. c. 13. the punishment of rape was much mitigated: the offence itself, of ravishing a damsel within age, (that is, twelve years old) either with her consent or without, or of any other woman against her will, being reduced to a trespass, if not prosecuted by appeal within 40 days, and subjecting the offender only to two years imprisonment, and a fine at the king's will. But this lenity being productive of the most terrible consequences, it was, in ten years afterwards, 13 Edw. I. found necessary to make the offence of forcible rape felony by statute Westm. 2. c. 34. And by statute 18 Eliz. c. 7. it is made felony without benefit of clergy: as is also the abominable wickedness of carnally knowing or abusing any woman-child under the age of ten years; in which case the consent or non-consent is immaterial, as by reason of her tender years she is incapable of judgment and discretion. Sir Matthew Hale is indeed of opinion, that such profligate actions committed on an infant under the age of twelve years, the age of female discretion by the common law, either with or without consent, amount to rape and felony; as well since as before the statute of queen Elizabeth: but that law has in general been held only to extend to infants under ten; though it should seem that damsels between ten and twelve are still under the protection of the statute Westm. 1. the law with respect to their seduction not having been altered by either of the subsequent statutes.

A male infant, under the age of fourteen years, is

Rape.

Rape.

presumed by law incapable to commit a rape, and therefore it seems cannot be found guilty of it. For though in other felonies "*malitia supplet ætatem*;" yet, as to this particular species of felony, the law supposes an imbecillity of body as well as mind.

The civil law seems to suppose a prostitute or common harlot incapable of any injuries of this kind: not allowing any punishment for violating the chastity of her, who hath indeed no chastity at all, or at least hath no regard to it. But the law of England does not judge so hardly of offenders, as to cut-off all opportunity of retreat even from common strumpets, and to treat them as never capable of amendment. It therefore holds it to be felony to force even a concubine or harlot; because the woman may have forsaken that unlawful course of life: for, as Bracton well observes, "*licet meretrix fuerit antea, certe tunc temporis non fuit, cum reclamando nequitie ejus consentire noluit.*"

As to the material facts requisite to be given in evidence and proved upon an indictment of rape, they are of such a nature, that, though necessary to be known and settled, for the conviction of the guilty and preservation of the innocent, and therefore are to be found in such criminal treatises as discourse of these matters in detail, yet they are highly improper to be publicly discussed, except only in a court of justice. We shall therefore merely add upon this head a few remarks from Sir Matthew Hale, with regard to the competency and credibility of witnesses; which may, *salvo pudore*, be considered.

And, first, the party ravished may give evidence upon oath, and is in law a competent witness; but the credibility of her testimony, and how far forth she is to be believed, must be left to the jury upon the circumstances of fact that concur in that testimony. For instance: if the witness be of good fame; if she presently discovered the offence, and made search for the offender; if the party accused fled for it; these and the like are concurring circumstances, which give greater probability to her evidence. But, on the other side, if she be of evil fame, and stand unsupported by others; if she concealed the injury for any considerable time after she had opportunity to complain; if the place, where the fact was alleged to be committed, was where it was possible she might have been heard, and she made no outcry: these and the like circumstances carry a strong, but not conclusive, presumption that her testimony is false or feigned.

Moreover, if the rape be charged to be committed on an infant under 12 years of age, she may still be a competent witness, if she hath sense and understanding to know the nature and obligations of an oath; and, even if she hath not, it is thought by Sir Matthew Hale, that she ought to be heard without oath, to give the court information; though that alone will not be sufficient to convict the offender. And he is of this opinion, first, Because the nature of the offence being secret, there may be no other possible proof of the actual fact; though afterwards there may be concurring circumstances to corroborate it, proved by other witnesses: and, secondly, Because the law allows what the child told her mother, or other relations, to be given in evidence, since the nature of the

case admits frequently of no better proof; and there is much more reason for the court to hear the narration of the child herself, than to receive it at second-hand from those who swear they heard her say so. And indeed it seems now to be settled, that in these cases infants of any age are to be heard; and, if they have any idea of an oath, to be also sworn: it being found by experience, that infants of very tender years often give the clearest and truest testimony. But in any of these cases, whether the child be sworn or not, it is to be wished, in order to render her evidence credible, that there should be some concurrent testimony of time, place, and circumstances, in order to make out the fact; and that the conviction should not be grounded singly on the unsupported accusation of an infant under years of discretion. There may be therefore, in many cases of this nature, witnesses who are competent, that is, who may be admitted to be heard; and yet, after being heard, may prove not to be credible, or such as the jury is bound to believe. For one excellence of the trial by jury is, that the jury are triers of the credit of the witnesses, as well as of the truth of the fact.

"It is true (says this learned judge), that rape is a most detestable crime, and therefore ought severely and impartially to be punished with death; but it must be remembered, that it is an accusation easy to be made, hard to be proved, but harder to be defended by the party accused, though innocent." He then relates two very extraordinary cases of malicious prosecution for this crime, that had happened within his own observation; and concludes thus: "I mention these instances, that we may be the more cautious upon trials of offences of this nature, wherein the court and jury may with so much ease be imposed upon, without great care and vigilance; the heinousness of the offence many times transporting the judge and jury with so much indignation, that they are over-hastily carried to the conviction of the persons accused thereof, by the confident testimony of sometimes false and malicious witnesses."

RAPHAEL (D'Urbino), the greatest, most sublime, and most excellent painter that has appeared, since the revival of the fine arts, was the son of an indifferent painter named *Sanzio*, and was born at Urbino on Good Friday 1482. The popes Julius II. and Leo X. who employed him, loaded him with wealth and honour; and it is said that cardinal De St Bibiana had such a value for him, that he offered him his niece in marriage. His genius is admired in all his pictures; his contours are free, his ordonnances magnificent, his designs correct, his figures elegant, his expressions lively, his attitudes natural, his heads graceful; in fine, every thing is beautiful, grand, sublime, just, and adorned with graces. These various perfections he derived not only from his excellent abilities, but from his study of antiquity and anatomy; and from the friendship he contracted with Ariosto, who contributed not a little to the improvement of his taste. His pictures are principally to be found in Italy and Paris. That of the Transfiguration, preserved at Rome in the church of St Peter Monterio, passes for his master-piece. He had a handsome person, was well proportioned, and had great sweetness of temper; was polite, affable, and modest.

Rape.
Raphael.

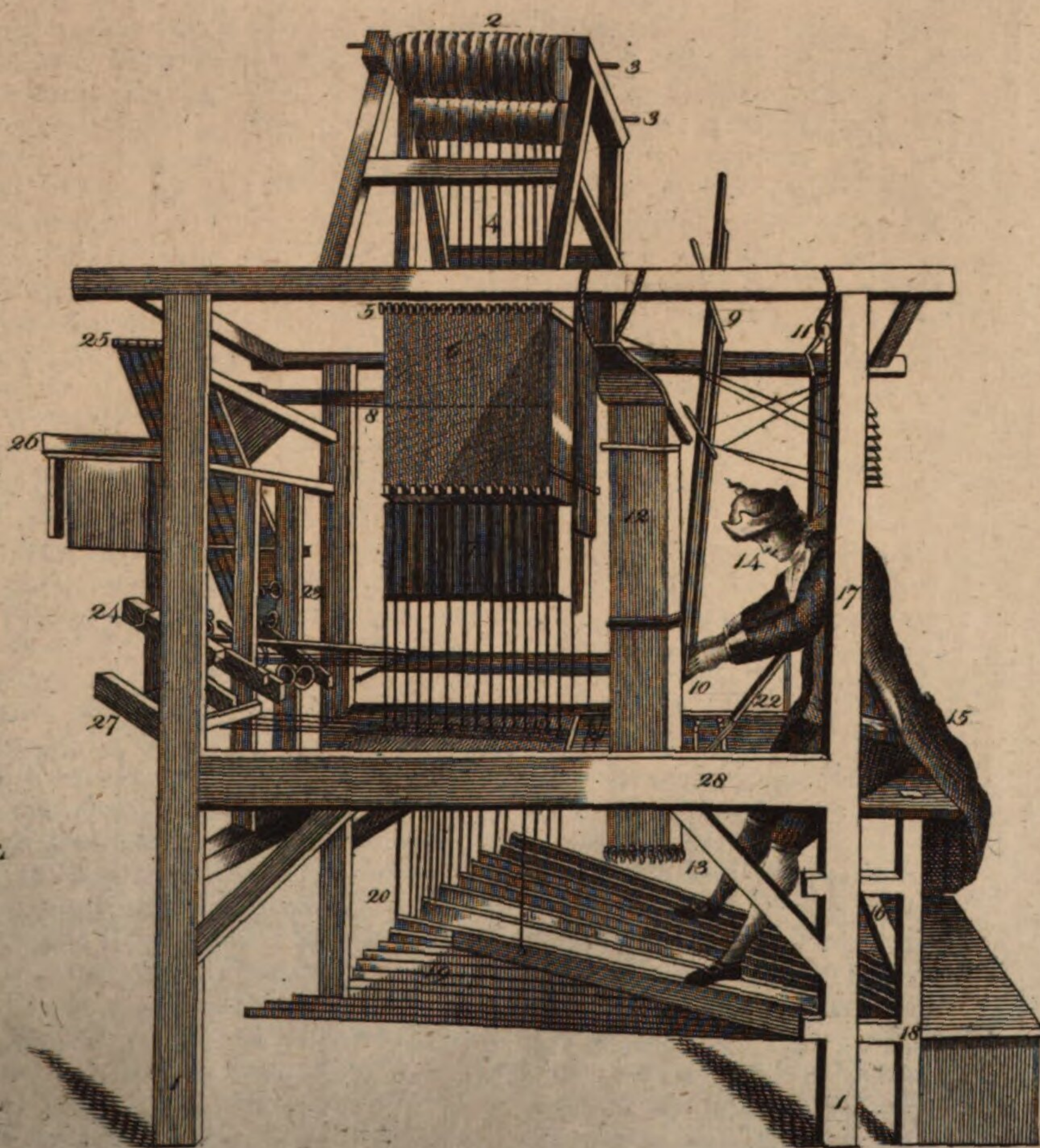
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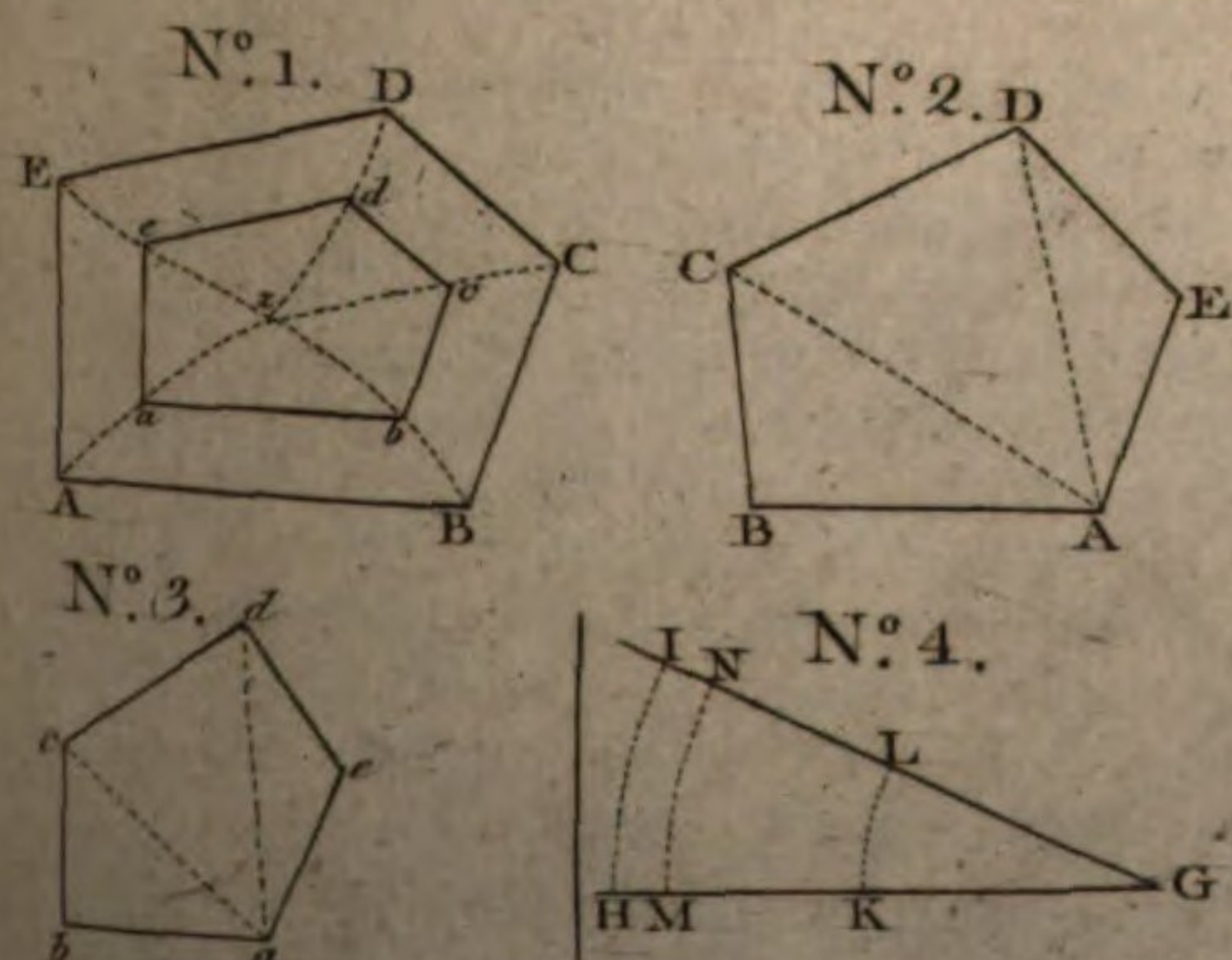
Raphidia.



Ribbon Loom.



Reduction.



Raphaim
||
Raphidia.

deft. He, however, lived in the utmost splendor; most of the eminent masters of his time were ambitious of working under him; and he never went out without a crowd of artists and others, who followed him purely through respect. He was not only the best painter in the world, but perhaps the best architect too; on which account Leo X. charged him with building St Peter's church at Rome: but he was too much addicted to pleasure, which occasioned his death at 37 years of age. He left a great number of disciples; among whom were Julio Romano and John Francis Penni, who were his heirs. Many able engravers, as Raimondi, George Mantuan, and Bloemart, engraved after Raphael. See PAINTING, p. 595 and 598.

RAPHAIM, or REPHAIM, (Moses), a name signifying *Giants*, as they really were, and an actual people too, situated in Basan or Batanea, beyond Jordan, separated from the Zanzummim by the river Jabbok. Also a valley near Jerusalem; Joshua x.

RAPHANUS, RADISH; a genus of the filiquosa order, belonging to the tetradynamia class of plants; and in the natural method ranking under the 39th order, *Siliquosa*. The calyx is close; the filiqua torose, or swelling out in knots, subarticulated, and round. There are two melliferous glandules between the shorter stamina and the pistil, and two between the longer stamina and the calyx.

There is only one species, viz. the sativus, or common garden radish; of which there are several varieties. They are annual plants, which being sowed in the spring, attain perfection in two or three months, and shoot up soon after into stalk for flower and seed, which, ripening in autumn, the whole plant, root and top, perishes; so that a fresh supply must be raised annually from seed in the spring, performing the sowings at several different times, from about Christmas until May, in order to continue a regular succession of young tender radishes throughout the season: allowing only a fortnight or three weeks interval between the sowings; for one crop will not continue good longer than that space of time, before they will either run to seed, or become tough, sticky, and too hot to eat.

RAPHANIDOSIS, a punishment inflicted at Athens upon adulterers. The manner of it was this: The hair was plucked off from the privities of the offender, hot ashes laid upon the place, and a radish or mullet thrust up his fundament, as has been mentioned under ADULTERY. To this Juvenal alludes, *Sat. x. ver. 317. Quosdam machos et mugilis intrat*. Persons who had been thus punished were called *ευραπιδιστοι*. The word *raphanidosis* is derived from *ραφανισ*, a radish.

RAPHIDIA, in zoology; a genus of insects, of the neuroptera order; the characters of which are these: The head is of a horny substance, and depressed or flattened: the mouth is armed with two teeth, and furnished with four palpi: the stemmata are three in number: the wings are deflected: the antennæ are filiform, as long as the thorax; the anterior part of which is lengthened out, and of a cylindrical form: the tail of the female is terminated by an appendix, resembling a flexible crooked bristle.—There are three species. The most remarkable is the ophiopsis; which for its shape is one of the most singular that can be seen †. It has an oblong head, shaped like a heart,

with its point joined to the thorax, and the broad part before. It is smooth, black, flattened, continually shaking, with short antennæ, yellowish maxillæ, and four palpi. Towards the middle of the upper part of the head, between the eyes, are the three stemmata, placed in a triangle. The thorax, to which this head is fastened, is narrow, long, and cylindrical. The abdomen, broader, is black like the rest of the body, with the segments margined yellow. The feet are of a yellowish cast. The wings, which are fastigated, are white, diaphanous, veined, and as it were covered with a very fine net-work of black. This insect, in the figure of its head, resembles a snake. It is found but seldom, and in woods only. Its larva, chrysalis, and habitation, are absolutely unknown.

RAPIER, formerly signified a long old-fashioned sword, such as those worn by the common soldiers: but it now denotes a small sword, as contradistinguished from a back-sword.

RAPIN (Rene), a Jesuit and eminent French writer, was born at Tours in 1621. He taught polite literature in the society of the Jesuits with great applause, and was justly esteemed one of the best Latin poets and greatest wits of his time. He died at Paris in 1687. He wrote, 1. A great number of Latin poems, which have rendered him famous throughout all Europe; among which are his *Hortorum libri quatuor*, which is reckoned his master-piece. 2. Reflections on Eloquence, Poetry, History, and Philosophy. 3. Comparisons between Virgil and Homer, Demosthenes and Cicero, Plato and Aristotle, Thucydides and Titus Livius. 4. The History of Jansenism. 5. Several works on religious subjects. The best edition of his Latin poems is that of Paris in 1723, in 3 vols 12mo.

RAPIN de Thoyras (Paul de), a celebrated historian, was the son of James de Rapin lord of Thoyras, and was born at Castres in 1661. He was educated at first under a tutor in his father's house; and afterwards sent to Puylaurens, and thence to Saumur. In 1697 he returned to his father, with a design to apply himself to the study of the law, and was admitted an advocate: but some time after, reflecting that his being a Protestant would prevent his advancement at the bar, he resolved to quit the profession of the law, and apply himself to that of the sword; but his father would not consent to it. The revocation of the edict of Nantes in 1685, and the death of his father, which happened two months after, made him resolve to come to England; but as he had no hopes of any settlement here, his stay was but short. He therefore soon after went to Holland, and listed himself in the company of French volunteers at Utrecht, commanded by M. Rapin his cousin-german. He attended the Prince of Orange into England in 1688: and the following year the Lord Kingston made him an ensign in his regiment, with which he went into Ireland, where he gained the esteem of his officers at the siege of Carrickfergus, and had soon a lieutenant's commission. He was present at the battle of the Boyne, and was shot thro' the shoulder at the siege of Limerick. He was soon after captain of the company in which he had been ensign; but, in 1693, resigned his company to one of his brothers, in order to be tutor to the earl of Portland's son.

Rapier,
Rapin.

Rapine
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Ras-el-
Feel.

son. In 1699, he married Marianne Testard; but this marriage neither abated his care of his pupil, nor prevented his accompanying him in his travels. Having finished this employment, he returned to his family, which he had settled at the Hague; and here he continued some years. But as he found his family increase, he resolved to retire to some cheap country; and accordingly removed, in 1707, to Wesel, where he wrote his History of England, and some other pieces. Though he was of a strong constitution, yet seventeen years application (for so long was he in composing the history just mentioned) entirely ruined his health. He died in 1725. He wrote in French, 1. A Dissertation on the Whigs and Tories. 2. His History of England, printed at the Hague in 1726 and 1727, in 9 vols 4to, and reprinted at Trevoux in 1728, in 10 vols 4to. This last edition is more complete than that of the Hague. It has been translated into English, and improved with Notes, by the Reverend Mr Tindal, in 2 vols folio. This performance, though the work of a foreigner, is deservedly esteemed as the fullest and most impartial collection of English political transactions extant. The readers of wit and vivacity, however, may be apt to complain of him for being sometimes rather tedious and dull.

RAPINE, in law, the taking away another's goods &c. by violence.

RAPPERSWIL, a town of Switzerland, on the confines of the canton of Zurich, and of the territory of Gaster, with an old castle. It is strong by situation, being seated on a neck of land which advances into the lake of Zurich, and over which there is a bridge 850 paces long. It is subject to the cantons of Zurich and Berne. E. Long. 8. 57. N. Lat. 47. 20.

RAPPOLSTEIN, a town of France in Upper Alsace, which, before the Revolution, had the title of a barony. All the musicians of Alsace likewise depended upon this baron, and were obliged to pay him a certain tribute, without which they could not play upon their instruments. E. Long. 7. 28. N. Lat. 48. 15.

RAPTURE, an ecstasy or transport of mind. See EXTASY.

RARE, in physic, stands opposed to dense; and denotes a body that is very porous, whose parts are at a great distance from one another, and which is supposed to contain but little matter under a large bulk. See the following article.

RAREFACTION, in physics, the act whereby a body is rendered rare; that is, brought to possess more room, or appear under a larger bulk, without accession of any new matter.—This is very frequently the effect of fire, as has long been universally allowed. In many cases, however, philosophers have attributed it to the action of a repulsive principle. However, from the many discoveries concerning the nature and properties of the electric fluid and fire, there is the greatest reason to believe, that this repulsive principle is no other than elementary fire. See REPULSION.

RAS-EL-FEEL, one of the frontier provinces of Abyssinia, of which the late celebrated traveller Mr Bruce was made governor while in that country. It is but of small extent, and in its most prosperous state contained only 39 villages. The climate is extremely hot, in Mr Bruce's opinion one of the hottest in the world. He informs us, that on the first day of March, at three

o'clock in the afternoon, the thermometer stood at 114° in the shade, and in the evening at 82°; though at sunrise it had been no higher than 61. Notwithstanding this appearance of extreme heat, however, the sensation was by no means intolerable; they could hunt at mid-day, and felt the evenings rather cold. The soil is a fat, loose, black earth, which our author says is the same from 13° to 16° of north latitude; at least till we come to the deserts of Atbara, where the tropical rains cease. This country divides that of the Shangalla into two parts, nearly equal. These people inhabit a belt of land about 60 miles broad, all along the northern frontier of Abyssinia, excepting two large gaps or spaces which have been left open for the sake of commerce, and which are inhabited by strangers, to keep the Shangalla in awe. The latter trade in gold, which they pick up in the streams as it is washed down from the mountains; for there are no mines in their country, neither is there any gold in Abyssinia, excepting what is imported from this or some other country. The Shangalla are the natural enemies of the inhabitants of Ras-el-Feel, and much blood has been shed in the various incursions they have made upon one another; though of late those of Ras-el-Feel, by the assistance of the emperors, have been enabled to keep the Shangalla at bay.

RAS-SEM, a city of Tripoli in Barbary, concerning which a number of fables were told by the Tripoline ambassador, all of which were believed in England and other parts of Europe in the beginning of this century. (See PETRIFIED-City). Mr Bruce informs us, that it is situated about five days journey south from Bengazi; but has no water excepting one fountain, which has a disagreeable taste, and seems to be impregnated with alum. Hence it has obtained the name of *Ras-Sem*, or the fountain of poison. The only remains of antiquity in this place consist of the ruins of a tower or fortification, which, in the opinion of Mr Bruce, is as late as the time of the Vandals; but he says he cannot imagine what use they made of the water, and they had no other within two days journey of the place.—Here our traveller saw many of the animals called *jerboa*, a kind of mice; which, he says, seem to partake as much of the nature of a bird as of a quadruped.

RASAY, one of the Hebrides Islands, is about 13 miles long and 2 broad. It contains 700 inhabitants, has plenty of lime-stone, free-stone; and feeds great numbers of black cattle; but has neither deers, hares, nor rabbits. The only appearance of a harbour in Rasay is at Clachan Bay, where Mr Macleod the proprietor of the island resides. Rasay presents a bold shore, which rises to the height of mountains; and here the natives have, with incredible labour, formed many little corn fields and potato grounds. These heights decrease at the south end, where there are some farms and a good-looking country. Mr Macleod is sole proprietor of this island, and of Rona and Fladda at the north end of it, which are only proper for grazing.

The house of Rasay is pleasantly situated near the south-west end of the island, which is the most level part of it. It has an extensive and excellent garden, and is surrounded with forest trees of considerable magnitude; another proof that trees will grow upon the edge of the sea, though it must be allowed that the

Ras-Sem,
Rafay.

Rascians
||
Rastenburg.

channel here is narrow. Immediately behind the house of Rasay are the ruins of an ancient chapel, now used as the family burying-place.

Dr Johnson, in his Tour, expresses the highest satisfaction at the reception he met with when in Rasay from Mr Macleod.

RASCIANS, a poor oppressed people who dwelt on both sides of the Danube, and who, about the year 1594, being weary of the Turkish thralldom, first took 13 of their vessels upon that river; and then drawing together a body of fifteen thousand men between Buda and Belgrade, twice defeated the pashâ of Temeswar with a body of fourteen thousand Turks. They afterwards took Baczkerek, four miles from Belgrade, and the castle of Ottadt; then laying siege to that of Beche, on the Theyssa, the old pashâ of Temeswar marched to relieve it with eleven thousand men; but the Rascians encountering them, slew near ten thousand, and took 18 pieces of canon. The consequence of this victory was the reduction of Werfetz and Lutz. Then, sending to the archduke for aid and gunners, they offered to put themselves and their country under the emperor's protection.

RASOR-BILL. See ALCA, n° 4.

RASOR-Fish. See SOLEN.

RASTALL (John), a printer and miscellaneous writer, was born in London, probably about the end of the 15th century, and educated at Oxford. Returning from the university, he settled in the metropolis, and commenced printer, "then esteemed (says Wood) a profession fit for any scholar or ingenious man." He married the sister of Sir Thomas More, with whom, we are told, he was very intimate, and whose writings he strenuously defended. From the title-page of one of his books, he appears to have lived in Cheapside, at the sign of the mermaid. He died in the year 1536; and left two sons, William and John: the first of whom became a judge in queen Mary's reign, and the latter a justice of peace. This John Rastall, the subject of the present article, was a zealous Papist; but Bale says, that he changed his religion before his death. He wrote, 1. *Natura naturata*. Pits calls it a copious (*prolixa*) and ingenious comedy, describing Europe, Asia, and Africa; with cuts. What sort of a comedy this was, is not easy to conceive. Probably it is a cosmographical description, written in dialogue, and therefore styled a comedy. 2. The pastyme of the people; the cronycles of diverse realmys, and most especially of the realm of England, brevely compiled and emprinted in Cheapefyde, at the sign of the mearmaid, next Pollysgate, *cum privilegio*, fol. 3. *Ecclesia Johannis Rastall*, 1542. Was one of the prohibited books in the reign of Henry VIII. 4. *Legum Anglicanarum vocabula explicata*. French and Latin. Lond. 1567, 8vo. And some other works.

RASTADT, a town of Germany, in the circle of Suabia and marquisate of Baden, with a handsome castle. It is remarkable for a treaty concluded here between the French and Imperialists in 1714; and is seated on the river Merg, near the Rhine. E. Long. 9. 14. N. Lat. 48. 52.

RASTENBURG, a fine city in Prussia, on the Guber, surrounded with a wall, and since 1629 also with a rampart.

RAT, in zoology. See MUS.

The following receipt is said to have been found effectual for the destruction of rats. Take of the seeds of stavescare or lousewort, powdered, more or less as the occasion requires, one part; of oat-meal, three parts; mix them well, and make them up into a paste with honey. Lay pieces of it in the holes, and on the places where mice and rats frequent; and it will effectually kill or rid the place of those kind of vermin by their eating thereof.

Some time ago, the society for encouraging arts proposed a premium of 50l. for a preparation capable of alluring or fascinating rats so that they might be taken alive. In consequence of this, a great number of new traps, &c. were invented; and the following methods of alluring the rats to a certain place were published.

One of those most easily and efficaciously practised is the trailing some pieces of their most favourite food, which should be of the kind that has the strongest scent, such as toasted cheese or broiled red herrings, from the holes or entrances of the closet to their recesses in every part of the house or contiguous building. At the extremities and in different parts of the course of this trailed track, small quantities of meal, or any other kind of their food, should be laid, to bring the greater number into the tracks, and to encourage them to pursue it to the place where they are intended to be taken: at that place, when time admits of it, a more plentiful repast is laid for them, and the trailing repeated for two or three nights.

Besides this trailing and way-baiting, some of the most expert of the rat-catchers have a shorter and perhaps more effectual method of bringing them together; which is the calling them, by making such a whistling noise as resembles their own call; and by this means, with the assistance of the way-baits, they call them out of their holes, and lead them to the repast prepared for them at the place designed for taking them. But this is much more difficult to be practised than the art of trailing; for the learning the exact notes or cries of any kind of beasts or birds, so as to deceive them, is a peculiar talent which is seldom attained: though some persons have been known who could call together a great number of cats; and there was a man in London who could bring nightingales, when they were within hearing, about him, and even allure them to perch on his hand, so as to be taken.

In practising either of those methods, of trailing or calling, great caution must be used by the operator to suppress and prevent the scent of his feet and body from being perceived; which is done by overpowering that scent by others of a stronger nature. In order to this, the feet are to be covered with cloths rubbed over with asafœtida, or other strong-smelling substances; and even oil of rhodium is sometimes used for this purpose, but sparingly, on account of its dearness, though it has a very alluring as well as disguising effect. If this caution of avoiding the scent of the operator's feet, near the track, and in the place where the rats are proposed to be collected, be not properly observed, it will very much obstruct the success of the attempt to take them; for they are very shy of coming where the scent of human feet lies very fresh, as it intimates to their sagacious instinct the presence of human creatures, whom they naturally

Rat.

Rat.

naturally dread. To the above-mentioned means of alluring by trailing, way-baiting, and calling, is added another of a very material efficacy, which is, the use of oil of rhodium, which, like the marum Syriacum in the case of cats, has a very extraordinary fascinating power on these animals. This oil is extremely dear, and therefore sparingly used. It is exalted in a small quantity in the place, and at the entrance of it, where the rats are intended to be taken; particularly at the time when they are to be last brought together, in order to their destruction; and it is used also by smearing it on the surface of some of the implements used in taking by the method below described; and the effect it has in taking off their caution and dread, by the delight they appear to have in it, is very extraordinary.

It is usual, likewise, for the operator to disguise his figure as well as scent, which is done by putting on a sort of gown or cloak, of one colour, that hides the natural form, and makes him appear like a post or some such inanimate thing; which habit must likewise be scented as above, to overpower the smell of his person; and besides this, he is to avoid all motion till he has secured his point of having all the rats in his power.

When the rats are thus enticed and collected, where time is afforded, and the whole in any house and out-buildings are intended to be cleared away, they are suffered to regale on what they most like, which is ready prepared for them, and then to go away quietly for two or three nights; by which means those that are not allured the first night are brought afterwards, either by their fellows, or the effects of the trailing, &c. and will not fail to come duly again, if they are not disturbed or molested. But many of the rat-catchers make shorter work, and content themselves with what can be brought together in one night or two; but this is never effectual, unless where the building is small and entire, and the rats but few in number.

The means of taking them, when they are brought together, are various. Some entice them into a very large bag, the mouth of which is sufficiently capacious to cover nearly the whole floor of the place where they are collected; which is done by smearing some vessel, placed in the middle of the bag, with oil of rhodium, and laying in the bag baits of food. This bag, which before lay flat on the ground with the mouth spread open, is to be suddenly closed when the rats are all in. Others drive or fright them, by slight noises or motions, into a bag of a long form, the mouth of which, after all the rats are come in, is drawn up to the opening of the place by which they entered, all other ways of retreat being secured. Others, again, intoxicate or poison them, by mixing with the repast prepared for them the coculus Indicus, or the nux vomica. They direct four ounces of the coculus Indicus, with twelve ounces of oatmeal, and two ounces of treacle or honey, made into a moist paste with strong-beer: but if the nux vomica be used, a much less proportion will serve than is here given of the coculus. Any similar composition of these drugs, with that kind of food the rats are most fond of, and which has a strong flavour, to hide that of the drugs, will equally well answer the end. If indeed the coculus Indicus be well powdered, and infused in strong-beer for some time, at least half the quantity here directed will serve as well as the quantity before-mentioned. When the rats appear to be thoroughly in-

toxicated with the coculus, or sick with the nux vomica, they may be taken with the hand, and put into a bag or cage, the door of the place being first drawn to, lest those who have strength and sense remaining escape.

Rat-Island, a small detached part of the island of Lundy, off the north coast of Devon. Though noted in Donn's map of the county, it is not worth mention here, but as giving opportunity to subjoin a farther notice of Lundy, which island was purchased a few years since by Mr Cleveland M. P. for about 1200 guineas, who has a small villa on it: not more than 400 acres are cultivated: it is let altogether for 70l. a-year. The soil is good, though no trees will grow on the island. It has five springs of water: the houses are seven: the inhabitants, men, women, and children, do not exceed 24. The bird called *murr*, whose eggs are very large and fine, the Lundy parrot, and rabbits, are the chief produce; these abound, and are taken for the feathers, eggs, and skins, principally. They have now (1794) 70 bullocks and 400 sheep, but the latter do not thrive. They pay no taxes: fishing skiffs often call with necessities: the situation is very pleasant, and the rocks around, which are large, and partly granite, are wild, romantic, and novel. It had probably more inhabitants once, as human bones have been ploughed up. It has no place of worship, nor public-house; but strangers are always welcome. Eight cannon lie on the battlements on the top of a very steep precipice, under which is a curious cavern. Lord Gower, Mr Benson, and Sir J. B. Warren, K. B. have been former proprietors. See LUNDY.

Rat-Tails, or *Arrests*. See FARRIERY, § xxxvii.

RATAFIA, a fine spirituous liquor, prepared from the kernels, &c. of several kinds of fruits, particularly of cherries and apricots.

Ratafia of cherries is prepared by bruising the cherries, and putting them into a vessel wherein brandy has been long kept; then adding to them the kernels of cherries, with strawberries, sugar, cinnamon, white pepper, nutmeg, cloves; and to 20 pound of cherries 10 quarts of brandy. The vessel is left open ten or twelve days, and then stopped close for two months before it be tapped. Ratafia of apricots is prepared two ways, viz. either by boiling the apricots in white-wine, adding to the liquor an equal quantity of brandy, with sugar, cinnamon, mace, and the kernels of apricots; infusing the whole for eight or ten days; then straining the liquor, and putting it up for use: or else by infusing the apricots, cut in pieces, in brandy, for a day or two, passing it through a straining bag, and then putting in the usual ingredients.

RATCH, or *RASH*, in clock-work, a sort of wheel having twelve fangs, which serve to lift up the detents every hour, and make the clock strike. See CLOCK.

RATCHETS, in a watch, are the small teeth at the bottom of the fusee, or barrel, which stops it in winding up.

RATE, a standard or proportion, by which either the quantity or value of a thing is adjusted.

RATES, in the navy, the orders or classes into which the ships of war are divided, according to their force and magnitude.

The regulation, which limits the rates of men of war to the smallest number possible, seems to have been dictated by considerations of political economy, or of that of

Rat-Island
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Rates.

Rates. of the simplicity of the service in the royal dock-yards. The British fleet is accordingly distributed into six rates, exclusive of the inferior vessels that usually attend on naval armaments; as sloops of war, armed ships, bomb-ketches, fire-ships and cutters, or schooners commanded by lieutenants.

Ships of the first rate mount 100 cannon, having 42-pounders on the lower deck, 24-pounders on the middle deck, 12-pounders on the upper deck, and 6-pounders on the quarter-deck and fore-castle. They are manned with 850 men, including their officers, seamen, marines, and servants.

In general, the ships of every rate, besides the captain, have the master, the boatswain, the gunner, the chaplain, the purser, the surgeon, and the carpenter; all of whom, except the chaplain, have their mates or assistants, in which are comprehended the sail-maker, the master at arms, the armourer, the captain's clerk, the gunsmith, &c.

The number of other officers are always in proportion to the rate of the ship. Thus a first rate has six lieutenants, six master's mates, twenty-four midshipmen, and five surgeon's mates, who are considered as gentlemen: besides the following petty officers; quarter-masters and their mates, fourteen; boatswain's mates and yeomen, eight; gunner's mates and assistants, six; quarter-gunners, twenty-five; carpenter's mates, two, besides fourteen assistants; with one steward, and steward's mate to the purser.

If the dimensions of all ships of the same rate were equal, it would be the simplest and most perspicuous method to collect them into one point of view in a table: but as there is no invariable rule for the general dimensions. We must content ourselves with but a few remarks on ships of each rate, so as to give a general idea of the difference between them.

The *Victory*, one of the last built of our first rates, is 222 feet 6 inches in length, from the head to the stern; the length of her keel, 151 feet 3 inches; that of her gun-deck, or lower deck, 186 feet; her extreme breadth is 51 feet 10 inches; her depth in the hold, 21 feet 6 inches; her burden, 2162 tons; and her poop reaches 6 feet before the mizen-mast.

Ships of the second rate carry 90 guns upon three decks, of which those on the lower battery are 32-pounders; those on the middle, 18-pounders; on the upper deck, 12-pounders; and those on the quarter-deck, 6-pounders, which usually amount to four or six. Their complement of men is 750, in which there are six lieutenants, four master's mates, 24 midshipmen, and four surgeon's mates, 14 quarter-masters and their mates, eight boatswain's mates and yeomen, six gunner's mates and yeomen, with 22 quarter-gunners, two carpenter's mates, with 10 assistants, and one steward and steward's mate.

Ships of the third rate carry from 64 to 80 cannon, which are 31, 18, and 9 pounders. The 80-gun ships however begin to grow out of repute, and to give way to those of 74, 70, &c. which have only two whole batteries; whereas the former have three, with 28 guns planted on each, the cannon of their upper deck being the same as those on the quarter-deck and fore-castle of the latter, which are 9-pounders. The complement in a 74 is 650, and in a 64, 500 men; having, in peace, four lieutenants, but in war, five; and when an admiral

is aboard, six. They have three master's mates, 16 midshipmen, three surgeon's mates, 10 quarter-masters and their mates, six boatswain's mates and yeomen, four gunner's mates and yeomen, with 18 quarter-gunners, one carpenter's mate, with eight assistants, and one steward and steward's mate under the purser.

Ships of the fourth rate mount from 60 to 50 guns, upon two decks, and the quarter-deck. The lower tier is composed of 24-pounders, the upper tier of 12-pounders, and the cannon on the quarter-deck and fore-castle are 6-pounders. The complement of a 50 gun ship is 350 men, in which there are three lieutenants, two master's mates, 10 midshipmen, two surgeon's mates, eight quarter-masters and their mates, four boatswain's mates and yeomen, one gunner's mate and one yeoman, with 12 quarter-gunners, one carpenter's mate and six assistants, and a steward and steward's mate.

All vessels of war, under the fourth rate, are usually comprehended under the general name of *frigates*, and never appear in the line of battle. They are divided into the 5th and 6th rates; the former mounting from 40 to 32 guns, and the latter from 28 to 20. The largest of the fifth rate have two decks of cannon, the lower battery being of 18-pounders, and that of the upper deck of 9-pounders; but those of 36 and 32 guns have one complete deck of guns, mounting 12-pounders, besides the quarter-deck and fore-castle, which carry 6-pounders. The complement of a ship of 44 guns is 280 men; and that of a frigate of 36 guns, 240 men. The first has three, and the second two, lieutenants; and both have two master's mates, six midshipmen, two surgeon's mates, six quarter-masters and their mates, two boatswain's mates and one yeoman, one gunner's mate and one yeoman, with 10 or 11 quarter-gunners, and one purser's steward.

Frigates of the 6th rate carry 9-pounders, those of 28 guns having 3-pounders on their quarter-deck, with 200 men for their complement; and those of 24, 160 men: the former has two lieutenants, the latter, one; and both have two master's mates, four midshipmen, one surgeon's mate, four quarter-masters and their mates, one boatswain's mate and one yeoman, one gunner's mate and one yeoman, with six or seven quarter-gunners, and one purser's steward.

The sloops of war carry from 18 to 8 cannon, the largest of which have six-pounders; and the smallest, viz. those of 8 or 10 guns, four-pounders. Their officers are generally the same as in the 6th rates, with little variation; and their complements of men are from 120 to 60, in proportion to their force or magnitude. *N. B.* Bomb-vessels are on the same establishment as sloops; but fire-ships and hospital-ships are on that of fifth rates.

Nothing more evidently manifests the great improvement of the marine art, and the degree of perfection to which it has arrived in Britain, than the facility of managing our first rates; which were formerly esteemed incapable of government, unless in the most favourable weather of the summer.

Ships of the second rate, and those of the third, which have three decks, carry their sails remarkably well, and labour very little at sea. They are excellent in a general action, or in cannonading a fortress. Those of the third rate, which have two tiers, are fit for the line.

Rateen
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Ratio.

line of battle, to lead the convoys and squadrons of ships of war in action, and in general to suit the different exigencies of the naval service.

The fourth-rates may be employed on the same occasions as the third-rates, and may be also destined amongst the foreign colonies, or on expeditions of great distance; since these vessels are usually excellent for keeping and sustaining the sea.

Vessels of the fifth rate are too weak to suffer the shock of a line of battle; but they may be destined to lead the convoys of merchant ships, to protect the commerce in the colonies, to cruise in different stations, to accompany squadrons, or be sent express with necessary intelligence and orders. The same may be observed of the sixth rates.

The frigates, which mount from 28 to 38 guns upon one deck, with the quarter-deck, are extremely proper for cruising against privateers, or for short expeditions, being light, long, and usually excellent sailers.

RATEEN, or RATTEN, in commerce, a thick woollen stuff, quilled, woven on a loom with four treddles, like ferges and other stuffs that have the whale or quilling. There are some rateens dressed and prepared like cloths; others left simply in the hair, and others where the hair or knap is frized. Rateens are chiefly manufactured in France, Holland, and Italy, and are mostly used in linings. The frize is a sort of coarse rateen, and the drugget is a rateen half linen half woollen.

RATIFICATION, an act approving of and confirming something done by another in our name.

RATIO, in arithmetic and geometry, is that relation of homogeneous things which determines the quantity of one from the quantity of another, without the intervention of a third.

Two numbers, lines, or quantities, A and B, being proposed, their relation one to another may be considered under one of these two heads: 1. How much A exceeds B, or B exceeds A? And this is found by taking A from B, or B from A, and is called *arithmetic reason*, or *ratio*. 2. Or how many times, and parts of a time, A contains B, or B contains A? And this is called *geometric reason* or *ratio*; (or, as Euclid defines it, it is the *mutual habitude*, or *respect*, of two magnitudes of the same kind, according to quantity; that is, as to how often the one contains, or is contained in, the other); and is found by dividing A by B, or B by A. And here note, that that quantity which is referred to another quantity is called the *antecedent of the ratio*; and that to which the other is referred is called the *consequent of the ratio*; as, in the ratio of A to B, A is the antecedent, and B the consequent. Therefore any quantity, as antecedent, divided by any quantity as a consequent, gives the ratio of that antecedent to the consequent.

Thus the ratio of A to B is $\frac{A}{B}$, but the ratio of B to A is $\frac{B}{A}$; and, in numbers, the ratio of 12 to 4 is

$\frac{12}{4} = 3$, or triple; but the ratio of 4 to 12 is $\frac{4}{12} = \frac{1}{3}$, or subtriple.

And here note, that the quantities thus compared

must be of the same kind; that is, such as by multiplication may be made to exceed one the other, or as these quantities are said to have a ratio between them, which, being multiplied, may be made to exceed one another. Thus a line, how short soever, may be multiplied, that is, produced so long as to exceed any given right line; and consequently these may be compared together, and the ratio expressed: but as a line can never, by any multiplication whatever, be made to have breadth, that is, to be made equal to a superficies, how small soever; these can therefore never be compared together, and consequently have no ratio or respect one to another, according to quantity; that is, as to how often the one contains, or is contained in, the other. See QUANTITY.

RATIOCINATION, the act of reasoning. See REASONING.

RATION, or RATIAN, in the army, a portion of ammunition, bread, drink, and forage, distributed to each foldier in the army, for his daily subsistence, &c. The horse have rations of hay and oats when they cannot go out to forage. The rations of bread are regulated by weight. The ordinary ration of a foot soldier is a pound and a half of bread per day. The officers have several rations according to their quality and the number of attendants they are obliged to keep.—When the ration is augmented on occasions of rejoicing, it is called a *double ration*. The ship's crews have also their rations or allowances of biscuit, pulse, and water, proportioned according to their stock.

RATIONALE, a solution or account of the principles of some opinion, action, hypothesis, phenomenon, or the like.

RATIBOR, a town of Germany, in Silesia, and capital of a duchy of the same name, with a castle. It has been twice taken by the Swedes, and is seated on the river Oder, in a country fertile in corn and fruits, 15 miles north-east of Troppaw, and 142 east of Prague. E. Long. 22. 24. N. Lat. 50. 14.

RATISBON, an ancient, large, rich, handsome, and strong city of Germany, in Bavaria, free and imperial, with a bishop's see, whose bishop is a prince of the empire. It is called by the Germans Regensburg, from the river Regens, which runs under a fine stone bridge, and throws itself into the Danube below the city; and the rivers Luber and Nab mix with it above the city. The French call it Ratisbon, in imitation of the Latins; it hath formerly been subject to the kings of Bavaria, who made it the place of their residence; but it was declared free by the emperor Frederick I. which does not however hinder the dukes of Bavaria from dividing the toll with the citizens, according to an agreement between them. These princes have also the criminal jurisdiction, for which the magistrates of the city pay them homage. It is the first city of the bench of Suabia, and contains at present within its walls five different free states of the empire; namely, the bishop, the abbot of St Emmeran, the abbesses of the Low and High Munster, and the city. The inhabitants of Ratisbon have the privilege not to be cited before other tribunals, unless for actions above 400 florins. The senate is composed of 17 members, and there is a council of 10, which is charged with the government of the state. The citizens have a right to elect a chief, who judges of the affairs of police. The catholics have the exercise of their religion in the cathedral church, and others, and the

Ratiocination
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Ratisbon.

Ratlines
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Ravelin.

Raven
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Ravet.

the Lutherans in three churches, which they have built. The magistrates and officers of the city are all Protestants; and it is to be remarked, that although there are about 22 Catholic churches, yet there are very few Catholic citizens, the magistracy not allowing the freedom of the town to be given to Catholics living there. As this city is large, elegant, and full of magnificent houses, it has been chosen many years for the place of holding the diet, upon account of the conveniency, to many neighbouring princes and states, of sending their provisions by land and water, without great expence. The town-house, in the hall of which the Diet meets, is extremely magnificent. In the year 1740, however, when there was a war in Germany, the Diet met at Frankfort on the Main, till after the death of the emperor Charles VII. Provisions are very plentiful at Ratisbon in time of peace. The inhabitants have a good deal of trade, the river on which it stands being navigable, and communicating with a great part of Germany. It is 55 miles south-east of Nuremberg, 62 north of Munich, and 195 west of Vienna. E. Long. 12. 5. N. Lat. 48. 59.

RATLINES, or, as the sailors call them *ratlins*, those lines which make the ladder steps to go up the shrouds and puttocks, hence called the *ratlins of the shrouds*.

RATOLFZEL, a strong town of Germany, in Suabia, near the west end of the lake Constance. It is seated on that part of it called *Bodensee*, and belongs to the house of Austria, who took it from the duke of Wirtemberg, after the battle of Nordlingen. It is 12 miles west of the city of Constance. It is defended by the impregnable castle of Hohen Dwel, on an inaccessible hill in the middle of a plain, the rock of which is flint, so that a few men may hold it out against an army.

RATTLESNAKE. See CROTALUS.

RATTLESNAKE ROOT. See POLYGALA.

RATZEBURG, or RATZEMBURG, an ancient town of Germany, in the circle of Lower Saxony, and in the duchy of Lawenburgh, with a bishop's see and a castle. The town depends on the duchy of Lawenburg, and the cathedral church on that of Ratzburg. It is seated on an eminence, and almost surrounded with a lake 25 miles in length and three in breadth. The Duke of Lawenburg seized and fortified it in 1689, and the king of Denmark took it in 1693; but it was dismantled, and restored in 1700 to the Duke, who re-fortified it. This town has been frequently pillaged, particularly in 1552, by Francis duke of Saxe Lawenburg, because the canons refused to elect his son Magnus their bishop. It lies nine miles south of Lubec. This place is noted for its excellent beer. E. Long. 10. 58. N. Lat. 53. 47.

RAVA, a town of Great Poland, and capital of a palatinate of the same name, with a fortified castle, where they keep state prisoners. The houses are built of wood, and there is a Jesuits college. It is seated in a morass covered with water, which proceeds from the river Rava, with which it is surrounded. It is 45 miles south of Blosko, and 50 south-west of Warsaw. The palatinate is bounded on the north by that of Blosko, on the east by that of Mazovia, on the south by that of Sandomer, and on the west by that of Lencieza.

RAVELIN, in fortification, was anciently a flat

bastion placed in the middle of a curtain; but now a detached work composed only of two faces, which make a salient angle without any flanks, and raised before the counterescarp of the place. See FORTIFICATION.

RAVEN, in ornithology. See CORVUS.

Sea RAVEN, or *corvo marino* of Kongo in Africa, in ichthyology, is about six feet long, and big in proportion; but the most singular circumstance appertaining to this creature is the stone found in its head, to which the natives ascribe some medicinal virtues, and the delicate taste of its hard roe, which is still much admired, when dried in the sun, and becomes as hard as a stone.

RAVENGLAS, a town of Cumberland in England, situated between the rivers Irt and Esk, which, with the sea, encompass three parts of it. It is a well built place, and has a good road for shipping, which brings it some trade. E. Long. 0. 5. N. Lat. 54. 20.

RAVENNA (anc. geog.), a noble city of Gallia Cispadana; a colony of Thessalians, on the Adriatic, in washes or a boggy situation, which proved a natural security to it. The houses were all of wood, the communication by bridges and boats, and the town kept sweet and clean by the tides carrying away the mud and soil, (Strabo). Anciently it had a port at the mouth of the Bedefis; Augustus added a new port, capacious to hold a fleet, for the security of the Adriatic, between which and the city lay the Via Cæsaris. In the lower age it was the seat of the Ostrogoths for 72 years; but being recovered by Narses, Justinian's general, it became the residence of the exarchs, magistrates sent by the emperor from Constantinople, for 175 years, when it was taken by the Longobards. It is still called *Ravenna*, capital of Romania. The seat of the western or Roman Empire was by Honorius translated to Ravenna about the year 404, and hence the country in which it stood was called *Romania*, in the pope's territory. It had a very flourishing trade till the sea withdrew two miles from it, which has been a great detriment. The fortifications are of little importance, and the citadel is gone to ruin. It is now most remarkable for the excellent wine produced in its neighbourhood. The mausoleum of Theodoric is still to be seen, remarkable for being covered by a single stone 28 feet in diameter and 15 thick. It was at Ravenna that the duke of Nemours fell, after having gained a most decisive victory over the confederate army, in 1511. See FRANCE, n. 129, and Modern Universal History, vol. xx. p. 324. &c.

RAVENSBURG, a county of Germany, in Westphalia, bounded on the north by the bishoprics of Osnaburg and Minden, on the east by Lemgow, on the south by the bishopric of Paderborn, and on the west by that of Munster. It belongs to the king of Prussia, and has its name from the castle of Ravensburg.

RAVENSBURG, a free and imperial town of Germany, in Algow, in the circle of Suabia. It is well built, and the public structures are handsome. The inhabitants are partly Protestants and partly Papists. It is seated on the river Chenfs, in E. Long. 9. 46. N. Lat. 47. 44.

RAVET, an insect shaped like a may-bug, or cock chaffel, (see SCARABÆUS), with which the island of Guadaloupe is much pestered. It has a stinking smell, preys upon paper, books, and furniture, and whatever they

Ravilliac. they do not gnaw is discoloured by their ordure. These nasty insects, which are very numerous, and appear chiefly by night, would be intolerable, were it not for a large spider, some of them as long as a man's fist, which intangles them in its web, and otherwise surprises them. On which account the inhabitants of the island are very careful of these spiders.

Modern Univ. Hist.
vol. xxi.
p. 147.
note (A),
&c.

RAVILLIAC (Francis), the infamous assassin of Henry IV. of France, was a native of Angoulême, and at the time of his execution was about one or two and thirty years of age. See FRANCE, n° 146, and HENRY IV. of France. Ravilliac was the son of parents who lived upon alms. His father was that sort of inferior retainer to the law, to which the vulgar give the name of a *pettifogger*, and his son had been bred up in the same way. Ravilliac had set up a claim to an estate, but the cause went against him: this disappointment affected his mind deeply: he afterwards taught a school, and, as himself said, received charitable gifts, though but of a very small value, from the parents of those whom he taught; and yet his distress was so great, that he had much ado to live. When he was seized for the king's murder, he was very loosely guarded; all were permitted to speak with him who pleased; and it was thought very remarkable that a Jesuit should say to him, "Friend, take care, whatever you do, that you don't charge honest people." He was removed next day from the house of Espernon to the Conciergerie, the proper prison of the parliament of Paris. When he was first interrogated, he answered with great boldness, "That he had done it, and would do it, if it were to do again." When he was told that the king, though dangerously wounded, was living, and might recover, he said that he had struck him home, and that he was sure he was dead. In his subsequent examinations he owned that he had long had an intention to kill the king, because he suffered two religions in his kingdom; and that he endeavoured to obtain an audience of him, that he might admonish him. He also said that he understood the king's great armament to be against the pope, and that, in his opinion, to make war against the pope, was to make war against God. We have no distinct account of the three last examinations; but he is said to have persisted, in the most solemn asseverations, that he had no accomplices, and that nobody had persuaded him to the fact. He appeared surprised at nothing so much as at the universal abhorrence of the people, which, it seems, he did not expect. They were forced to guard him strictly from his fellow-prisoners, who would otherwise have murdered him. The butchers of Paris desired to have him put into their hands, affirming that they would slay him alive, and that he should still live 12 days. When he was put to the torture, he broke out into horrid execrations, and always insisted that he did the fact from his own motive, and that he could accuse nobody. On the day of his execution, after he had made the *amende honorable* before the church of Notre Dame, he was carried to the Greve; and, being brought upon a scaffold, was tied to a wooden engine in the shape of a St Andrew's cross. The knife with which he did the murder being fastened in his right hand, it was first burnt in a slow fire; then the fleshy parts of his body were torn with red-hot pincers, and melted lead, oil, pitch, and rosin, poured into the wounds,

and through a clay funnel into his bowels by the navel. *Ravilliac.* The people refused to pray for him; and when, according to the sentence pronounced upon him, he came to be dragged to pieces by four horses, one of those that were brought appearing to be but weak, one of the spectators offered his own, with which the criminal was much moved: he is said to have then made a confession, which was so written by the greffier Voisin, that not so much as one word of it could ever be read. He was very earnest for absolution, which his confessor refused, unless he would reveal his accomplices; "Give it me conditionally (said he); upon condition that I have told the truth," which they did. His body was so robust, that it resisted the force of the horses; and the executioner was at length obliged to cut him into quarters, which the people dragged through the streets. The house in which he was born was demolished, and a column of infamy erected; his father and mother were banished from Angoulême, and ordered to quit the kingdom upon pain of being hanged, if they returned, without any form of process; his brothers, sisters, uncles, and other relations, were commanded to lay aside the name of Ravilliac, and to assume some other. Such was the fate of this execrable monster, who, according to his own account, suffered himself to be impelled to such a fact by the seditious sermons and books of the Jesuits, whom Henry, rather out of fear than love, had recalled and caressed, and to whom he had bequeathed his heart.

Neither the dying words of Ravilliac, nor so much of his process as was published, were credited by his contemporaries. Regalt the historian says, that there were two different opinions concerning this assassination; one, that it was conducted by some grandees, who sacrificed that monarch to their old resentments; the other, that it was done by the emissaries of the Spaniards. Letters from Brussels, Antwerp, Mechlin, and other places, were received before the 15th of May, with a report of the king's death. Though nothing occurs in the examinations of Ravilliac that were first published, in reference to his journeys to Naples and other places; yet as these are set down as certain truths by good authors, so there are probable grounds to believe that they were not fictitious. It appears from Sir Ralph Winwood's Memorials, that Ravilliac had been not long before at Brussels. Amongst other circumstances that created a very great doubt, whether the assassin spoke truth, were the things found in his pocket at the time he was seized; amongst which was a chaplet, the figure of a heart made in cotton, in the centre of which he said there was a bit of the true cross, but when cut there was none, which he affirmed was given him by a canon at Angoulême, a piece of paper with the arms of France painted upon it, another full of characters, and a third containing verses for the meditation of a criminal going to execution. The provost of Pluviers, or Petiviers, in Beauce, about six miles from Paris, had said openly on the day that Henry IV. was murdered, "This day the king is either slain or dangerously wounded." After the king's death was known, he was seized and sent prisoner to Paris; but, before he was examined, he was found hanged in the strings of his drawers. His body was, notwithstanding, hung up by the heels on the common gibbet on the 19th of June. What increased the suspicions grounded

RAUN grounded on this man's end, was his having two sons Jesuits, and his being a dependent on the family of Monsieur d'Entragues.

RAUN, upon the river Miza, a town of some strength, remarkable for a bloody skirmish between the Prussians and Austrians, in August 1744. The king of Prussia, intending to get possession of Beraun, sent thither six battalions, with eight cannon, and 800 hussars; but General Festitz being there with a great party of his corps, and M. Luchesi with 1000 horse, they not only repulsed the Prussians, but attacked them in their turn, and, after a warm dispute, obliged them to retire with considerable loss.

RAURICUM (anc. geog.), a town of the Raurici, situated over against Abnoba, a mountain from which the Danube takes its rise. A Roman colony led by L. Manutius Plancus the scholar and friend of Cicero: called *Colonia Rauriaca* (Pliny), *Raurica* (Inscription), *Augusta Rauricorum*. The town was destroyed in Julian's time. It is now commonly called *Augst*, a village greatly decayed from what it formerly was. It is situated on the Rhine, distant about two hours to the east of Basil. The country is now the canton of Basil.

RAY (John), a celebrated botanist, was the son of Mr Roger Ray a blacksmith, and was born at Black Notly in Essex in 1628. He received the first rudiments of learning at the grammar-school at Braintree; and in 1644 was admitted into Catharine hall in Cambridge, from whence he afterwards removed to Trinity college in that university. He took the degree of master of arts, and became at length a senior fellow of the college; but his intense application to his studies having injured his health, he was obliged at his leisure hours to exercise himself by riding or walking in the fields, which led him to the study of plants. He noted from Johnson, Parkinson, and the *Phytologia Britannica*, the places where curious plants grew; and in 1658 rode from Cambridge to the city of Chester, from whence he went into North Wales, visiting many places, and among others the famous hill of Snowdon; returning by Shrewsbury and Gloucester. In 1660 he published his *Catalogus Plantarum circa Cantabrigiam nascentium*, and the same year was ordained deacon and priest. In 1661 he accompanied Francis Willoughby, Esq; and others in search of plants and other natural curiosities, in the north of England and Scotland; and the next year made a western tour from Chester, and through Wales, to Cornwall, Devonshire, Dorsetshire, Hampshire, Wiltshire, and other counties. He afterwards travelled with Mr Willoughby and other gentlemen through Holland, Germany, Italy, France, &c. took several tours in England, and was admitted fellow of the Royal Society. In 1672, his intimate and beloved friend Mr Willoughby died in the 37th year of his age, at Middleton Hall, his seat in Yorkshire; "to the infinite and unspeakable loss and grief (says Mr Ray) of myself, his friends, and all good men." There having been the closest and sincerest friendship between Mr Willoughby and Mr Ray, who were men of similar natures and tastes, from the time of their being fellow collegians, Mr Willoughby not only confided in Mr Ray, in his lifetime, but also at his death: for he made him one of the executors of his will, and charged him with the education of his sons Francis and

Thomas, leaving him also for life 60l. per annum. The eldest of these young gentlemen not being four years of age, Mr Ray, as a faithful trustee, betook himself to the instruction of them; and for their use composed his *Nomenclator Classicus*, which was published this very year, 1672. Francis the eldest dying before he was of age, the younger became Lord Middleton. Not many months after the death of Mr Willoughby, Mr Ray lost another of his best friends, bishop Wilkins; whom he visited in London the 8th of November 1672, and found near expiring by a total suppression of urine for eight days. As it is natural for the mind, when it is hurt in one part, to seek relief from another; so Mr Ray, having lost some of his best friends, and being in a manner left destitute, conceived thoughts of marriage; and accordingly, in June 1673, did actually marry a gentlewoman of about 20 years of age, the daughter of Mr Oakley of Launton in Oxfordshire. Towards the end of this year, came forth his "Observations Topographical, Moral, &c." made in foreign countries; to which was added his *Catalogus Stirpium in exteris regionibus observatarum*: and about the same time, his *Collection of unusual or local English words*, which he had gathered up in his travels through the counties of England. After having published many books on subjects foreign to his profession, he at length resolved to publish in the character of a divine, as well as in that of a natural philosopher: in which view he published his excellent demonstration of the being and attributes of God, entitled *The Wisdom of God manifested in the Works of the Creation*, 8vo, 1697. The rudiments of this work were read in some college lectures; and another collection of the same kind he enlarged and published under the title of *Three Physico-theological Discourses, concerning the Chaos, Deluge, and Dissolution of the World*, 8vo, 1692. He died in 1705. He was modest, affable, and communicative; and was distinguished by his probity, charity, sobriety, and piety. He wrote a great number of works; the principal of which, besides those already mentioned, are, 1. *Catalogus Plantarum Angliæ*. 2. *Dictionarium Trilingue secundum locos communes*. 3. *Historia Plantarum, Species, hætenus editas, aliasque insuper multas noviter inventas et descriptas complectens*, 3 vols. 4. *Methodus Plantarum nova, cum Tabulis*, 8vo, and several other works on plants. 5. *Synopsis Methodica Animalium quadrupedum et Serpentinæ generis*, 8vo. 6. *Synopsis Methodica Avium et Piscium*. 7. *Historia Insectorum, opus posthumum*. 8. *Methodus Insectorum*. 9. *Philosophical Letters, &c.*

RAY, in optics, a beam of light emitted from a radiant or luminous body. See **LIGHT** and **OPTICS**.

Inflected Rays, those rays of light which, on their near approach to the edges of bodies, in passing by them, are bent out of their course, being turned either from the body or towards it. This property of the rays of light is generally termed *diffraction* by foreigners, and Dr Hooke sometimes called it *deflection*.

Reflected Rays, those rays of light which, after falling upon the body, do not go beyond the surface of it, but are thrown back again.

Refracted Rays, those rays of light which, after falling upon any medium, enter its surface, being bent either towards or from a perpendicular to the point on which they fell.

Ray
||
Reading.

Pencil of Rays, a number of rays issuing from a point of an object, and diverging in the form of a cone.

RAZOR, a well-known instrument, used by surgeons, barbers, &c. for shaving off the hair from various parts of the body.—As shaving to many people is a most painful operation, cutlers in different countries have long applied their skill to remove that inconvenience. Some have invented soaps of a peculiar kind to make the operation more easy, and some have invented straps. With respect to razors, some artists have succeeded rather by accident than from any fixed principle; and therefore we have found great inequality in the goodness of razors made by the same artist.

A correspondent assures us, that he has for 40 years past been at much pains to find out razors made by the best makers both in England and Scotland, and was fortunate enough, about 22 years ago, to discover a kind made by a Scotchman of the name of *Logan*, which he called magnetical razors, because they were directed to be touched with an artificial magnet before using. These, our friend assures us, are most excellent razors, and he has used them for upwards of 20 years. He says likewise that they continue in good order, without requiring to be ground; but that the great drawback on their being generally used, is the price, which is higher than most people are able or disposed to give for that instrument. Our correspondent, who resides in the vicinity of London, also informs us, that lately the famous surgeon's instrument-maker, Mr Savigny in Pall Mall, after numberless experiments, in the course of above 20 years, has at length brought razors to a degree of perfection never yet equalled; and with such certainty, that the purchaser is in no danger of a disappointment, though the price is very moderate. By these, we are told, the operation of shaving is performed with greater ease, more perfectly, and more expeditiously, than with any other.

RE, in grammar, an inseparable particle added to the beginning of words to double or otherwise modify their meaning; as in re-action, re-move, re-export, &c.

RE-ACTION, in physiology, the resistance made by all bodies to the action or impulse of others that endeavour to change its state whether of motion or rest, &c.

READING, the art of delivering written language with propriety, force, and elegance.

“We must not judge so unfavourably of eloquence or good reading (says the illustrious Fenelon), as to reckon it only a frivolous art, that a declaimer uses to impose upon the weak imagination of the multitude, and to serve his own ends. It is a very serious art, designed to instruct people; to suppress their passions and reform their manners; to support the laws, direct public councils, and to make men good and happy.”

Delivery in reading should be less animated than in interesting speaking.

Reason and experience demonstrate, that *delivery in reading ought to be less animated than in interesting speaking*. In every exercise of the faculty of speech, and those expressions of countenance and gesture with which it is generally attended, we may be considered to be always in one of the two following situations: First, delivering our *bosom sentiments* on circumstances which relate to ourselves or others, or, secondly, *repeating* something that was spoken on a certain occasion for the amuse-

ment or information of an auditor. Now, if we observe the deliveries natural to these two situations, we shall find, that the first may be accompanied with every degree of expression which can manifest itself in us, from the lowest of sympathy to the most violent and energetic of the superior passions; while the latter, from the speaker's chief business being to repeat what he heard *with accuracy*, discovers only a faint imitation of those signs of the emotions which we suppose agitated him from whom the words were first borrowed.—The use and necessity of this difference of manner is evident; and if we are attentive to these natural signs of expression, we shall find them conforming with the greatest nicety to the slightest and most minute movements of the breast.

This repetition of another's words might be supposed to pass through the mouth of a second or third person; and in these cases, since they were not ear and eye witnesses of him who first spoke them, their manner of delivery would want the advantage necessarily arising from an immediate idea of the original one; hence, on this account, this would be a still less lively representation than that of the first *repeater*. But as, from a daily observation of every variety of speech and its associated signs of emotion, mankind soon become pretty well acquainted with them, and this in different degrees, according to their discernment, sensibility, &c. experience shows us that these latter *repeaters* (as we call them) might conceive and use a manner of delivery which, though less *characteristic* perhaps, would on the whole be no way inferior to the first, as to the *common* natural expression proper for their situation. It appears, therefore, that repeaters of *every degree* may be esteemed upon a level as to animation, and that our twofold distinction above contains accurately enough the whole variety of ordinary delivery;—we say *ordinary*, because

There is another very peculiar kind of delivery sometimes used in the person of a *repeater*, of which it will in this place be necessary to take some notice. What we mean here is *mimicry*; an accomplishment which, when perfectly and properly displayed, never fails of yielding a high degree of pleasure. But since this pleasure chiefly results from the principle of *imitation* respecting *manner*, and not from the purport of the *matter* communicated; since, comparatively speaking, it is only attainable by few persons, and practised only on particular occasions;—on these accounts it must be refused a place among the modes of useful delivery taught us by *general* nature, and esteemed a qualification purely anomalous.

These distinctions with regard to a speaker's situation of mind premised, let us see to which of them an *author* and his *reader* may most properly be referred, and how they are circumstanced with regard to one another.

The matter of all books is, either what the author says in his *own* person, or an acknowledged recital of the words of *others*: hence an author may be esteemed both an *original* speaker and a *repeater*, according as what he writes is of the first or second kind. Now a reader must be supposed either actually to personate the author, or one whose office is barely to communicate what he has said to an auditor. But in the first of these suppositions he would, in the delivery of what is the author's own, evidently commence *mimic*; which being, as above

Reading.

Reading above observed, a character not acknowledged by general nature in this department, ought to be rejected as generally improper. The other supposition therefore must be accounted right; and then, as to the *whole* matter of the book, the reader is found to be exactly in the situation of a *repeater*, save that he takes what he delivers from the page before him instead of his memory. It follows then, in proof of our initial proposition, that, if we are directed by nature and propriety, the manner of our delivery in reading ought to be inferior in warmth and energy to what we should use, were the language before us the spontaneous effusions of our own hearts in the circumstances of those out of whose mouths it is supposed to proceed.

Evident as the purport of this reasoning is, it has not so much as been glanced at by the writers on the subject we are now entered upon, or any of its kindred ones; which has occasioned a manifest want of accuracy in several of their rules and observations. Among the rest, this precept has been long reverberated from author to author as a perfect standard for propriety in reading. "Deliver yourselves in the same manner you would do, were the matter your own original sentiments uttered directly from the heart." As all kinds of delivery must have many things in common, the rule will in many articles be undoubtedly right; but, from what has been said above, it must be as certainly faulty in respect to several others; as it is certain nature never confounds by like signs two things so very different, as a *copy* and an *original*, an emanation darted immediately from the sun, and its weaker appearance in the lunar reflection.

The precepts we have to offer for improving the above-mentioned rule, shall be delivered under the heads of *accent, emphasis, modulation, expression, pauses, &c.*

2
Accent.

I. *Accent.* In attending to the affections of the voice when we speak, it is easy to observe, that, independent of any other consideration, one part of it differs from another, in *stress, energy, or force* of utterance. In words we find one syllable differing from another with respect to this mode; and in sentences one or more words as frequently vary from the rest in a similar manner. This stress with regard to *syllables* is called *accent*, and contributes greatly to the variety and harmony of language. Respecting *words*, it is termed *emphasis*; and its chief office is to assist the sense, force, or perspicuity of the sentence—of which more under the next head.

"Accent (as described in the Lectures on Elocution) is made by us two ways; either by dwelling longer upon one syllable than the rest, or by giving it a smarter percussion of the voice in utterance. Of the first of these we have instances in the words *glōry, fāther, hōly*; of the last in *bat'tle, hab'it, bor'row*. So that accent with us is not referred to tune, but to time; to quantity, not quality; to the more equable or precipitate motion of the voice, not to the variation of the notes or inflexions."

In *theatric declamation*, in order to give it more pomp and solemnity, it is usual to dwell longer than common upon the unaccented syllables; and the author now quoted has endeavoured to prove (p. 51. 54.) the practice faulty, and to show (p. 55.) that "though it (i. e. true solemnity) may demand a slower utterance

than usual, yet (it) requires that the same proportion in point of quantity be observed in the syllables, as there is in musical notes when the same tune is played in quicker or slower time." But that this deviation from ordinary speech is not a fault, as our author asserts; nay, that on the contrary it is a real beauty when kept under proper regulation, the following observations it is hoped will sufficiently prove.

(I.) It is a truth of the most obvious nature, that those things which on their application to their proper senses have a power of raising in us certain ideas and emotions, are ever *differently* modified in their constituent parts when different effects are produced in the mind: and also (II.) that, within proper bounds, were we to suppose these constituent parts to be proportionally increased or diminished as to *quantity*, this effect would still be the same as to *quality*.—For instance: The different ideas of strength, swiftness, &c. which are raised in us by the same species of animals, is owing to the different form of their corresponding parts; the different effects of music on the passions, to the different airs and movements of the melody; and the different expressions of human speech, to a difference in tone, speed, &c. of the voice. And these peculiar effects would still remain the same, were we to suppose the animals above alluded to, to be *greater* or *lesser*, within their proper bounds; the movement of the music *quicker* or *slower*, provided it did not palpably interfere with that of some other species; and the pitch of the voice *higher* or *lower*, if not carried out of the limits in which it is observed on similar occasions naturally to move. Farther (III.) since, respecting the emotions more especially, there are no rules to determine *à priori* what effect any particular attribute or modification of an object will have upon a percipient, our knowledge of this kind must evidently be gained from experience. Lastly, (IV.) In every art imitating nature we are pleased to see the characteristic members of the pattern *heightened* a little farther than perhaps it ever was carried in any real example, provided it be not bordering upon some ludicrous and disagreeable provinces of excess.

Now for the application of these premises.—To keep pace and be consistent with the *dignity* of the tragic muse, the delivery of her language should necessarily be dignified; and this it is plain from observation (I.) cannot be accomplished otherwise than by something different in the manner of it from that of ordinary speech; since *dignity* is essentially different from *familiarity*. But how must we discover this different manner? By attending to nature: and in this case she tells us, that besides using a *slower* delivery, and greater *distinctness* of the words (which every thing merely *grave* requires, and gravity is a *concomitant* of dignity, though not its *essence*), we must dwell a little *longer* upon the *unaccented* syllables than we do in common. As to what our author observes in the above quotation, of *dignity's* only requiring a *slower* utterance than ordinary, while the proportion of the syllables as to quantity continues the same; it is apprehended the remark (II.) respecting *quickness* and *slowness* of movement, will show it to be not altogether true. For since the delivery is not altered in *form*, its expression must be still of the same kind, and perhaps what may be rightly suggested by the term *gravely familiar*.

Reading.

But something farther may be yet said in defence of this *artificial* delivery, as our author calls it. Is not the movement of any thing, of whatever species, when dignified or solemn, in general of an *equable* and *deliberate* nature (as in the minuet, the military step, &c.)? And in theatrical declamation, is not the propensity to introduce this *equableness* so strong, that it is almost *impossible* to avoid it wholly, were we ever so determined to do it? If these two queries be answered in the affirmative (as we are persuaded they will), while the first supports our argument for the *propriety* of the manner of delivery in question, the second discovers a kind of *necessity* for it. And that this manner may be carried a little *farther* in quantity on the *stage* than is usual in *real life*, the principle (IV.) of heightening nature will justify, provided fashion (which has ever something to do in these articles) give it a sanction; for the *precise* quantity of several heightenings may be varied by this great legislator almost at will.

3
Emphasis.

II. *Emphasis*. As *emphasis* is not a thing annexed to particular words, as *accent* is to syllables, but owes its rise chiefly to the *meaning* of a passage, and must therefore vary its seat according as that meaning varies, it will be necessary to explain a little farther the general idea given of it above.

Of man's first disobedience, and the fruit
Of that forbidden tree, whose mortal taste
Brought death into the world, and all our woe, &c.
Sing heav'nly muse, &c.

Supposing, in reference to the above well-known lines, that originally other beings, besides men, had disobeyed the commands of the Almighty, and that the circumstance were well known to us, there would fall an *emphasis* upon the word *man's* in the first line, and hence it would be read thus;

Of *man's* first disobedience, and the fruit, &c.

But if it were a notorious truth, that mankind had transgressed in a peculiar manner more than once, the *emphasis* would fall on *first*, and the line be read,

Of man's *first* disobedience, &c.

Again, admitting death (as was really the case) to

have been an unheard-of and dreadful punishment brought upon man in consequence of his transgression; on that supposition the third line would be read,

Brought *death* into the world, &c.

But if we were to suppose mankind knew there was such an evil as death in other regions, though the place they inhabited had been free from it till their transgression; the line would run thus,

Brought death into the *world*, &c.

Now from a proper delivery of the above lines, with regard to any one of the suppositions we have chosen, out of several others that might in the same manner have been imagined, it will appear that the *emphasis* they illustrate is effected by a manifest *delay* in the pronunciation, and a tone something *fuller* and *louder* than is used in ordinary; and that its office is solely to determine the meaning of a sentence with reference to something said before, presupposed by the author as general knowledge, or in order to remove an ambiguity where a passage is capable of having more senses given it than one.

But, supposing in the above example, that none of the senses there pointed out were precisely the true one, and that the meaning of the lines were no other than what is obviously suggested by their simple construction; in that case it may be asked, if in reading them there should be no word dignified with the emphatical accompaniments above described?—The answer is, Not one with an emphasis of the *same* kind as that we have just been illustrating; yet it is nevertheless true, that on hearing these lines well read, we shall find some words distinguished from the rest by a manner of delivery bordering a little upon it (A). And these words will in general be such as seem the most important in the sentence, or on other accounts to merit this distinction. But as at best it only *enforces*, *graces*, or *enlivens*, and not *fixes* the meaning of any passage, and even caprice and fashion (B) have often a hand in determining its place and magnitude, it cannot properly be reckoned an *essential* of delivery. However, it is of too much moment to be neglected by those who would wish to be good readers; and, for the sake of distinction, we may not

(A) The following lines will illustrate both these kinds of stresses: For, to convey their right meaning, the word *ANY* is evidently to be pronounced louder and fuller than those with the accents over them.

Get wéalth and pláce, if possible with gráce;

If not, by *ANY* méans get wéalth and pláce. POPE.

This couplet is accented in the manner we find it in the *Essay on Elocution* by *Mason*. And if, according to the judgment of this author, the words thus distinguished are to have an emphatical stress, it must be of the inferior kind above-mentioned, and which a little farther on we call *emphasis of force*; while the word *ANY* in a different type alone possesses the other sort of energy, and which is there contradistinguished by the term *emphasis of sense*.

(B) Among a number of people who have had proper opportunities of learning to read in the best manner it is now taught, it would be difficult to find two, who, in a given instance, would use the *emphasis of force* alike, either as to place or quantity. Nay some scarce use any at all: and others will not scruple to carry it *much* beyond any thing we have a precedent for in common discourse; and even now and then throw it upon words so very trifling in themselves, that it is evident they do it with no other view, than for the sake of the *variety* it gives to the modulation.—This practice, like the introduction of discords into music, may without doubt be indulged now and then; but were it too frequent, the capital intent of these energies would manifestly either be destroyed or rendered dubious.

Reading. not unaptly denominate both the kinds of energies in question, by the terms *emphasis of sense*, and *emphasis of force* (c).

Now from the above account of these two species of emphasis it will appear, "that in reading, as in speaking, the first of them must be determined entirely by the *sense* of the passage, and always made *alike*: But as to the other, *taste* alone seems to have a right of fixing its situation and quantity."—Farther: Since the more essential of these two energies is solely the work of *nature* (as appears by its being *constantly* found in the common conversation of people of all kinds of capacities and degrees of knowledge), and the most ignorant person never fails of using it *rightly* in the effusions of his own heart, it happens very luckily, and ought always to be remembered, that provided we understand what we read, and give way to the dictates of our own feeling, the *emphasis of sense* can scarce ever avoid falling spontaneously upon its proper place.

Here it will be necessary to say something by way of reply to a question which will naturally occur to the mind of every one. As the rule for the *emphasis of sense* requires we should understand what we read before it can be properly used, it is incumbent upon us never to attempt to read what we have not previously studied for that purpose? In answer to this, it must be observed, that though such a step will not be without its advantages; yet, as from the fairness of printed types, the well-known pauses of punctuation, and a long acquaintance with the phraseology and construction of our language, &c. experience tells us it is *possible* to comprehend the sense at the first reading, a previous perusal of what is to be read does not seem *necessary* to all, though, if they would wish to appear to advantage, it may be *expedient* to many; and it is this circumstance

which makes us venture upon extemporary reading, and give it a place among our amusements.—Similar remarks might be made with regard to *modulation, expression, &c.* did not what is here observed naturally anticipate them.

III. *Modulation* (D). Every person must have observed, that, in speaking, the voice is subject to an alteration of sound, which in some measure resembles the movement of a tune. These sounds, however, are evidently nothing like so much varied as those that are strictly musical; and we have attempted to show in the preceding chapter, that, besides this, they have an essential difference in themselves. Nevertheless, from the general similitude of these two articles, they possess several terms in common; and the particular we have now to examine is in both of them called *modulation*. This affection of the voice, being totally *arbitrary*, is differently characterized in different parts of the world; and, through the power of custom, every place is inclined to think their own the only one natural and agreeable, and the rest affected with some barbarous twang or ungainly variation (E). It may be observed, however, that though there is a general uniform cast or fashion of modulation peculiar to every country, yet it by no means follows, that there is or can be any thing fixed in its application to particular passages; and therefore we find different people will, in any given instance, use modulations something different, and nevertheless be each of them equally agreeable.

But, quitting these general remarks, we shall (as our purpose requires it) consider the properties of modulation a little more minutely.

First, then, we may observe, that, in speaking, there is a particular sound (or *key-note*, as it is often called) in which the modulation for the most part runs, and to which

(c) The first of these terms answers to the *simple emphasis* described in the *Lectures on Elocution*, and the second nearly to what is there called *complex*. The difference lies in this. Under *complex emphasis* the author seems (for he is far from being clear in this article) to include the *tones* simply considered of all the emotions of the mind; as well the *tender* and *languid*, as the *forcible* and *exulting*. Our term is intended to be confined to such modes of expression alone as are marked with an apparent *stress* or *increase* of the voice.

(D) The author of the *Introduction to the Art of Reading*, not allowing that there is any variation of tone, as to *high* and *low*, in the delivery of a complete period or sentence, places modulation solely in the diversification of the *key-note* and the variety of syllables, as to *long* or *short*, *swift* or *slow*, *strong* or *weak*, and *loud* or *soft*. As we are of a different opinion, our idea of modulation is confined purely to *harmonious inflexions of voice*. These qualities of words, it is true, add greatly both to the force and beauty of delivery; yet, since some of them are fixed and not arbitrary (as *long* and *short*), and the others (of *swift* and *slow*, *strong* and *weak*, *loud* and *soft*), may be considered as modes of expression which do not affect the modulation as to *tone*, it will agree best with our plan to esteem these properties as respectively belonging to the established laws of *pronunciation* and the *imitative* branch of expression mentioned in the end of the ensuing head.

(E) From what accounts we have remaining of the modulation of the ancients, it appears to have been highly ornamented, and apparently something not unlike our modern *recitative*; particularly that of their theatric declamation was music in its strictest sense, and accompanied with instruments. In the course of time and the progress of refinement, this modulation became gradually more and more simple, till it has now lost the genius of music, and is entirely regulated by *taste*. At home here, every one has heard the *sing-song* cant, as it is called, of

Ti ti dum dum, ti ti dum ti dum de,

Ti dum ti dum, ti dum ti dum dum de;

which, though disgusting now to all but mere rustics on account of its being out of fashion, was very probably the favourite modulation in which heroic verses were recited by our ancestors. So fluctuating are the taste and practices of mankind! But whether the power of language over the passions has received any advantage from the change just mentioned, will appear at least very doubtful, when we recollect the stories of its former triumphs, and the inherent charms of musical sounds.

Reading.

which its occasional inflexions, either above or below, may in some respects be conceived to have a reference, like that which common music has to its key-note. Yet there is this difference between the two kinds of modulation, that whereas the first always concludes in the key-note, the other frequently concludes a little below it (F). This key-note, in speaking, is generally the sound given at the outset of every complete sentence or period; and it may be observed on some occasions to vary its pitch through the limits of a musical interval of a considerable magnitude. The tones, that fall a little lower than the key at the close of a sentence or period, are called *cadences*. These cadences, if we are accurate in our distinctions, will, with respect to their offices, be found of two kinds; though they meet so frequently together, that it may be best to conceive them only as answering a double purpose. One of these offices is to assist the sense, and the other to decorate the modulation. An account of the first may be seen in the section on *Pauses*; and the latter will be found to show itself pretty frequently in every thing grave and plaintive, or in poetic description and other highly ornamented language, where the mind is by its influence brought to feel a placid kind of dignity and satisfaction. These two cadences, therefore, may be conveniently distinguished by applying to them respectively the epithets *significant* and *ornamental*.

We have already observed, that reading should in some things differ from speaking; and the particular under consideration seems to be one which ought to vary a little in these arts. For,

Modulation in reading serves a twofold purpose. At the same time that it gives pleasure to the ear on the principles of harmony, it contributes through that medium to preserve the attention. And since written language (when not purely dramatical) is in general more elegant in its construction, and musical in its periods, than the oral one; and since many interesting particulars are wanting in reading, which are present in speaking, that contribute greatly to fix the regard of the hearer; it seems reasonable, in order to do justice to the language, and in part to supply the incitements of attention just alluded to, that in the former of these two articles a modulation should be used something more harmonious and artificial than in the latter. Agreeably to this reasoning, it is believed, we shall find every reader, on a narrow examination, adopt more or less a modulation thus ornamented: though, after all, it must be acknowledged there are better grounds to believe, that the practice has been hitherto directed intuitively by nature, than that it was discovered by the inductions of reason. We shall conclude this head with a rule for modulation in reading. "In every thing dramatic, colloquial, or of simple narrative, let your modulation be the same as in speaking; but when the subject is flowery, solemn, or dignified, add something to its harmony,

diversify the key-note, and increase the frequency of cadences in proportion to the merit of the composition."

It will readily be seen, that the precepts here drawn from a comparison between speaking and reading, would be very inadequate, were they left destitute of the assistance of *taste*, and the opportunity of *frequently hearing and imitating masterly readers*. And indeed, to these two great auxiliaries we might very properly have referred the whole matter at once, as capable of giving sufficient directions, had we not remembered that our plan required us to found several of our rules as much on the principles of a philosophical analysis, as on those more familiar ones which will be found of greater efficacy in real practice.

IV. *Expression*. 1. There is no composition in music, however perfect as to key and melody, but, in order to do justice to the subject and ideas of the author, will require, in the performing, something more than an exact adherence to *tune* and *time*. This something is of a nature, too, which perhaps can never be adequately pointed out by any thing graphic, and results entirely from the taste and feeling of the performer. It is that which chiefly gives music its power over the passions, and characterises its notes with what we mean by the words *sweet*, *harsh*, *dull*, *lively*, *plaintive*, *joyous*, &c. for it is evident every sound, considered abstractedly, without any regard to the movement, or high and low, may be thus modified. In practical music, this commanding particular is called *Expression*; and as we find certain tones analogous to it frequently coalescing with the modulation of the voice, which indicate our passions and affections (thereby more particularly pointing out the meaning of what we say), the term is usually applied in the same sense to speaking and reading.

These tones are not altogether peculiar to man.—Every animal, that is not dumb, has a power of making several of them. And from their being able, unassisted by words, to manifest and raise their kindred emotions, they constitute a kind of language of themselves. In this language of the heart man is eminently conversant; for we not only understand it in one another, but also in many of the inferior creatures subjected by providence to our service.

The expression here illustrated is one of the most essential articles in good reading, since it not only gives a finishing to the sense, but, on the principles of sympathy and antipathy, has also a peculiar efficacy in interesting the heart. It is likewise an article of most difficult attainment; as it appears from what follows, that a masterly reader ought not only to be able to incorporate it with the modulation properly as to *quality*, but in any degree as to *quantity*.

Every thing written being a proper imitation of speech, expressive reading must occasionally partake of all

5
Expression
as to the
tones of the
voice.

(F) As musical sounds have always an harmonical reference to a key or fundamental note, and to which the mind is still secretly attending, no piece of music would appear perfect, that did not close in it, and so naturally put an end to expectation. But as the tones used in speech are not musical, and therefore cannot refer harmonically to any other sound, there can be no necessity that this terminating sound (and which we immediately below term the *cadence*) should either be used at all, or follow any particular law as to form, &c. farther than what is imposed by taste and custom.

Reading. all its tones. But from what was said above, of the difference between reading and speaking, it follows, that these signs of the emotions should be less strongly characterised in the former article than in the latter. Again, as several of these tones of expression are in themselves agreeable to the mind, and raise in us agreeable emotions (as those of *pity*, *benevolence*, or whatever indicates *happiness*, and *goodness* of heart), and others disagreeable (as those of a *boisterous*, *malevolent*, and *depraved* nature, &c.) it farther appears, since reading is an art *improving* and not *imitating* nature, that, in whatever degree we abate the expressions of the tones above alluded to in the first case, it would be eligible to make a greater abatement in the latter. But as to the quantities and proportional magnitudes of these abatements, they, like many other particulars of the same nature, must be left solely to the taste and judgment of the reader.

To add one more remark, which may be of service on more accounts than in suggesting another reason for the doctrine above. Let it be remembered, that tho' in order to acquit himself agreeably in this article of expression, it will be necessary every reader should *feel* his subject as well as *understand* it; yet, that he may preserve a proper ease and masterliness of delivery, it is also necessary he should guard against discovering too much emotion and perturbation.

From this reasoning we deduce the following rule, for the tones which indicate the passions and emotions.

"In reading, let all your tones of expression be borrowed from those of common speech, but something more faintly characterised. Let those tones which signify any disagreeable passion of the mind, be still more faint than those which indicate their contrary; and preserve yourself so far from being affected with the subject, as to be able to proceed through it with that peculiar kind of ease and masterliness, which has its charms in this as well as every other art."

We shall conclude this section with the following observation, which relates to speaking as well as reading. When words fall in our way, whose "sounds seem an echo to the sense," as *squirr*, *buzz*, *hum*, *rattle*, *bifs*, *jar*, &c. we ought not to pronounce them in such a manner as to heighten the imitation, except in light and ludicrous subjects. For instance, they should not in any other case be sounded *squir.r.r—buzz.z.z—hum.m.m—r.r.rattle*, &c. On the contrary, when the imitation lies in the *movement*, or *flow and structure of a whole passage* (which frequently happens in poetry), the delivery may always be allowed to give a heightening to it with the greatest propriety; as in the following instances, out of a number more which every experienced reader will quickly recollect.

In these deep solitudes and awful cells,
Where heav'nly-pensive Contemplation dwells,
And ever-musing Melancholy reigns—
Pope's *Eloisa to Abeldard*.

With easy course
The vessels glide, unless their speed be stopp'd
By dead calms, that oft lie on these smooth seas.
Dyer's *Fleece*.

Softly sweet in Lydian measure,
Soon he sooth'd her soul to pleasure.
Dryden's *Ode on St Cecilia's day*.

Still gathering force it smokes, and, urg'd amain,
Whirls, leaps, and thunders down impetuous to the plain.
Pope's *Iliad*, B. 13.

For who to dumb forgetfulness a prey,
This pleasing anxious being ere resign'd,
Left the warm precincts of the cheerful day,
Nor cast one longing ling'ring look behind?

Grey's *Elegy*.

2. Besides the particular tones and modifications of Expression voice above described, which always accompany and express our inward agitations, nature has in these cases endowed us with another language, which, instead of the ear, addresses itself to the eye, thereby giving the communications of the heart a double advantage over those of the understanding, and us a double chance to preserve so inestimable a blessing. This language is what arises from the different, almost involuntary movements and configurations of the face and body in our emotions and passions, and which, like that of tones, every one is formed to understand by a kind of intuition.

When men are in any violent agitation of mind, this co-operating expression (as it is called) of face and gesture is very strongly marked, and totally free from the mixture of any thing which has a regard to gracefulness, or what appearance they may make in the eyes of others. But in ordinary conversation, and where the emotions are not so warm, fashionable people are perpetually insinuating, into their countenance and action, whatever they imagine will add to the ease and elegance of their deportment, or impress on the spectator an idea of their amiableness and breeding. Now, though the above-mentioned natural organical signs of the emotions should accompany every thing spoken, yet from what was observed in the introductory part of this article (like the tones we have just treated upon), they should in reading be much less strongly expressed, and those suffer the greatest diminution that are in themselves the most ungainly. And as it was in the last section recommended to the reader to preserve himself as far from being affected in all passionate subjects as to be able to keep a temperate command over the various affections of the voice, &c. so under the sanction of this subordinate feeling he may accompany his delivery more frequently with any easy action or change of face, which will contribute to set off his manner, and make it agreeable on the principles of art.

As these calm decorations of action (as we may call them) are not altogether natural, but have their rise from a kind of institution, they must be modelled by the practices of the polite. And though mankind differ from one another scarce more in any particular than in that of talents for adopting the graceful actions of the body, and hence nothing determinate can be said of their nature and frequency, yet even those, most happily calculated to acquit themselves well in their use, might profit by considering that it is better greatly to abridge the display, than to over-do it ever so little. For the peculiar modesty of deportment with which the inhabitants of this kingdom are endowed, makes us in common endeavour to suppress many signs of an agitated mind; and in such cases the bodily ones in particular are very sparingly used. We have also a natural and rooted dislike to any kind of affectation; and to no species,

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species, that we can recollect, a greater, than to that which is seen in a person who pretends to mimicry and courtly gesture, without possessing the advantages and talents they require; and of which not many people, comparatively speaking, have any remarkable share.

The inference of this is too obvious to need drawing out, and we would particularly recommend it to the consideration of those readers who think the common occurrences of a newspaper, &c. cannot be properly delivered without a good deal of elbow-room.

Although it is impossible to come to particulars in any directions of this kind, yet there is one article of our present subject on which a serviceable remark may be made. In ordinary discourse, when we are particularly pressing and earnest in what we say, the eye is naturally thrown upon those to whom we address ourselves: And in reading, a turn of this organ now and then upon the hearers, when any thing very remarkable or interesting falls in the way, has a good effect in gaining it a proper attention, &c. But this should not be too frequently used; for if so, besides its having a tendency to confound the natural importance of different passages, it may not be altogether agreeable to some to have their own reflections broken in upon by a signal, which might be interpreted to hint at their wanting regulation.

One observation more, and then we shall attempt to recapitulate the substance of this section in the form of a precept. Though it is, when strictly examined, inconsistent, both in speaking and reading, to imitate with action what we are describing, yet as in any thing comic such a practice may suggest ideas that will accord with those of the subject, it may there be now and then indulged in either of these articles.

"In a manner similar to that directed with regard to tones, moderate your bodily expressions of the signs of the emotions. And in order to supply, as it were, this deficiency, introduce into your carriage such an easy gracefulness, as may be consistent with your acquirements in these particulars, and the necessary dread which should ever be present of falling into any kind of affectation or grimace."

V. *Pauses*. Speech consisting of a succession of distinct words, must naturally be liable (both from a kind of accident, and a difficulty there may be in beginning certain sounds or portions of phrases immediately on the ending of certain others) to several small intermissions of voice; of which, as they can have no meaning, nothing farther need here be said. There are, however, some pauses, which the sense necessarily demands; and to these the substance of this section is directed.

Reading

The pauses are in part to distinguish the members of sentences from one another, the terminations of complete periods, and to afford an opportunity for taking breath. Besides this, they have a very graceful effect in the modulation, on the same account they are so essential in music.—In both articles, like blank spaces in pictures, they set off and render more conspicuous what-soever they disjoin or terminate.

Were language made up of nothing but short colloquial sentences, these pauses, though they might do no harm, and would generally be graceful, would however be superseded as to use by the completeness and *narrowness*, as we may say, of the meaning. But in more diffuse language, composed of several detached sentences, and which require some degree of attention in order to take in the sense, the intermissions of voice under consideration are of the greatest service, by signifying to the mind the progress and completion of the whole passage. Now, though in extensive and differently formed periods there may be members whose completeness of sense might be conceived of various degrees, and hence might seem to require a set of pauses equally numerous; yet, since the sense does not altogether depend upon these intermissions, and their ratios to one another, if capable of being properly defined, could not be accurately observed, grammarians have ventured to conceive the whole class of pauses as reducible to the four or five kinds now in use, and whose marks and ratios are well known (G); presuming that under the eye of taste; and with the assistance of a particular to be next mentioned, they would not fail in all cases to suggest intermissions of voice suitable to the sense. But in many of these extensive and complex periods, rounded with a kind of redundancy of matter, where the full sense is long suspended, and the final words are not very important, there would be some hazard of a misapprehension of the termination, had we not more evident and infallible notice of it than that which is given by the pause. This notice is the *cadence*, referred to in the section on *Modulation*; which, as is there observed, besides the ornamental variety it affords, appears from these remarks to be a very necessary and serviceable article in perspicuous delivery.

As this cadence naturally accompanies the end of every entire sense, circumstanced as above-mentioned, it may sometimes fall before the *femicolon*, but more generally before the *colon*, as well as the period: For these marks are often found to terminate a complete sense; and in these cases, the relation what follows has to what went before, is signified to the mind by the relative shortness of the stop, and the form of introducing the additional matter. Nor can any bad consequence

(G) Supposing the *comma* (,) one time, the *femicolon* (;) will be two; the *colon* (:) three, and the *period* (.) as also the marks of *interrogation* (?) and *admiration* (!) four of these times. The blank line (— or ---), and the *breaks* between *paragraphs*, intimate still greater times; and by the same analogy may be reckoned a double and quadruple period respectively. Now and then these blank lines are placed immediately after the ordinary points, and then they are conceived only as separating for the eye the different natures of the matter;—as a question from an answer,—precept from example,—premises from inferences, &c. in which case their import is evident. But of late some authors have not scrupled to confound these distinctions; and to make a blank serve for all the pauses universally, or the mark of an indefinite rest, the quantity of which is left to the determination of the reader's taste. A practice, it is imagined, too destructive of the intended precision of these typical notices to be much longer adopted.

Reading. quence arise from thus founding distinctions on ratios of time, which it may be said are too nice to be often rightly hit upon: for if a confusion should happen between that of the *colon* and *period*, there is perhaps so trifling a difference between the nature of the passages they succeed, as to make a small inaccuracy of no consequence. And as to the rests of the semicolon and period, it will not be easy to mistake about them, as their ratio is that of two to one. Add to this the power which the matter and introduction of the subsequent passages have to rectify any slight error here made, and we shall be fully satisfied, that the pauses as usually explained, with the cadence above described, and a proper knowledge of the language, will convey sufficient information to the understanding of the constructive nature of the passages after which they are found.

It may be observed, that in natural speech, according to the warmth and agitation of the speaker, the rests are often short and injudiciously proportioned, and hence that every thing thus delivered cannot be so graceful as it might have been from a proper attention to their magnitude and effects.

Pauses then, though chiefly subjected to the sense, are, as was remarked at the outset, serviceable in beautifying the modulation, &c.—And since books are often inaccurately printed as to points, and people's tastes differ some little about their place and value, it appears, that, “although in reading great attention should be paid to the stops, yet a greater should be given to the sense, and their correspondent times occasionally lengthened beyond what is usual in common speech;” which observation contains all that we shall pretend to lay down by way of rule for the management of pauses in the delivery of written language.

As there are two or three species of writing, which have something singular in them, and with regard to the manner in which they should be read, a few particular remarks seem necessarily required, we shall conclude this article with laying them before the reader:

1. OF PLAYS, and such like CONVERSATION-PIECES. Writings of this kind may be considered as intended for two different purposes; one to unfold subject matter for the exercise of theatric powers; and the other to convey amusement, merely as fable replete with pleasing incidents and characteristic manners. Hence there appears to be great latitude for the display of a *consistent* delivery of these performances: for while, on one hand, a good reader of very inferior talents for mimicry may be heard with a tolerable degree of pleasure; on the other, if any person is qualified to give a higher degree of life and force to the dialogue and characters by delivering them as an actor, he must be fully at liberty to start from the confinement of a chair to a posture and area more suited to his abilities; and, if he be not deceived in himself, his hearers will be considerable gainers by the change.—The next article is,

2. SERMONS or other ORATIONS, which in like manner may be conceived intended for a double purpose. First, as matter for the display of oratorical powers; and, secondly, as persuasive discourses, &c. which may be read like any other book. Therefore it appears (for reasons similar to those above) that according as clergymen are possessed of the talents of elocution, they

Reading. may consistently either rehearse their sermons, in the manner of an extemporary harangue, or deliver them in the more humble capacity of one who is content to entertain and instruct his hearers with reading to them his own or some other person's written discourse.

That either of these manners of delivery (or a mixture of them), in either of the cases above-mentioned, is agreeable, we find on a careful examination. For this will show us how frequently they run into one another; and that we are so far from thinking such transitions wrong, that, without a particular attention that way, we scarce ever perceive them at all.

3. POETRY is the next and last object of our present remarks. This is a very peculiar kind of writing, and as much different from the language of ordinary discourse as the movements of the dance are from common walking. To ornament and improve whatever is subservient to the pleasures and amusements of life, is the delight of human nature. We are also pleased with a kind of *excess* in any thing which has a power to amuse the fancy, inspire us with enthusiasm, or awaken the soul to a consciousness of its own importance and dignity. Hence one pleasure, at least, takes its rise, that we feel in contemplating the performances of every art; and hence the language of poetry, consisting of a measured rhythm, harmonious cadences, and an elevated picturesque diction, has been studied by the ingenious, and found to have a powerful influence over the human breast in every age and region. There is such an affinity between this language and music, that they were in the earlier ages never separated; and though modern refinement has in a great measure destroyed this union, yet it is with some degree of difficulty in rehearsing these divine compositions we can forget the singing of the muse.

From these considerations (and some kindred ones mentioned in sect. iii.) in repeating verses, they are generally accompanied with a modulation rather more ornamented and musical than is used in any other kind of writing. And accordingly, as there seems to be the greatest propriety in the practice, the rule for this particular in the section just referred to, will allow any latitude in it that can gain the sanction of taste and pleasure.

Rhymes in the lighter and more soothing provinces of poetry are found to have a good effect; and hence (for reasons like those just suggested) it is certainly absurd to endeavour to smother them by a feeble pronunciation, and running one line precipitately into another, as is often affected to be done by many of our modern readers and speakers. By this method they not only destroy one source of pleasure intended by the composer (which though not great is nevertheless genuine), but even often supply its place with what is really disagreeable, by making the rhymes, as they are interruptedly perceived, appear accidental blemishes of a different style, arising from an unmeaning recurrence of similar sounds. With regard then to reading verses terminated with rhyme, the common rule, which directs to pronounce the final words *full*, and to distinguish them by a slight pause even where there is none required by the sense, seems the most rational, and consequently most worthy, of being followed. See DECLAMATION, NARRATION, and ORATORY.

READING, a town of Berkshire in England, pleasantly seated on the river Kennet, near the confluence with the Thames. It had once a fine rich monastery,
D of

Readings of which there are large ruins remaining. It had also a castle built by king Henry I. but it was afterwards levelled with the ground. It is a corporation, enjoys several privileges, and sends two members to parliament. The two navigable rivers render it a fit place for trade. W. Long. 1. 0. N. Lat. 51. 25.

READINGS, or *Various READINGS*, in criticism, are the different manner of reading the texts of authors in ancient manuscripts, where a diversity has arisen from the corruption of time, or the ignorance of copyists. A great part of the business of critics lies in settling the readings by confronting the various readings of the several manuscripts, and considering the agreement of the words and sense.

Readings are also used for a sort of commentary or gloss on a law, text, passage, or the like, to show the sense an author takes it in, and the application he conceives to be made of it.

RE-AGGRAVATION, in the Romish ecclesiastical law, the last monitory, published after three admonitions, and before the last excommunication. Before they proceed to fulminate the last excommunication, they publish an aggravation, and a re-aggravation. Fevret observes, that in France the minister is not allowed to come to re-aggravation, without the permission of the bishop or official, as well as that of the lay judge. See **EXCOMMUNICATION**.

REAL (Cæsar Vichard de St), a polite French writer, son of a counsellor to the senate of Chambery in Savoy. He came young to France, distinguished himself at Paris by several ingenious productions, and resided there a long time without title or dignity, intent upon literary pursuits. He died at Chambery in 1692, advanced in years, though not in circumstances. He was a man of great parts and penetration, a lover of the sciences, and particularly fond of history. A complete edition of his works was printed at Paris, in 3 vols 4to, 1745, and another in 6 vols 12mo.

REAL Presence. See **TRANSUBSTANTIATION**.

REALGAR. See **CHEMISTRY**, n° 1279.

REALISTS, a sect of school-philosophers formed in opposition to the nominalists. Under the Realists are included the Scotists, Thomists, and all excepting the followers of Ockham. Their distinguishing tenet is, that universals are realities, and have an actual existence out of an idea or imagination; or, as they express it in the schools, a *parte rei*; whereas the nominalists contend, that they exist only in the mind, and are only ideas, or manners of conceiving things.—Dr Odo, or Oudard, a native of Orleans, afterwards abbot of St Martin de Tournay, was the chief of the sect of the realists. He wrote three books of dialectics, where, on the principles of Boethius and the ancients, he maintained that the object of that art is things, not words; whence the sect took its rise and name.

REALITY, in the schools, a diminutive of *res*, "thing," first used by the Scotists, to denote a thing which may exist of itself; or which has a full and absolute being of itself, and is not considered as a part of any other.

REALM, a country which gives its head or governor the denomination of a *king*.

RE-ANIMATION means the reviving or restoring to life those who are apparently dead. Sudden death is

dreaded by every human being, and it is one of those evils against which the Church of England prays in her Litany. Accidents, however, cannot always be prevented; but, after they have happened, it is often possible to prevent their effects. This, by the establishment of what with great propriety has been called the *Humane Society*, has been abundantly proved: for, in the course of 12 years immediately after their institution, they were the means of saving the lives of 850 persons, who otherwise would in all human probability have been lost to the community. Since that period, they have saved many more; and various persons, even in the most distant parts of the kingdom, by following their directions, have done the same. To preserve one human being from premature death, we must consider as of the utmost consequence both as citizens and Christians; how much more the preservation of thousands. It appears from the writings of Doctors Mead, Winslow, Bruhier, Fothergill, Haller, Lecat, Tissot, Van Engelen, Gummer, and others, that they had prepared the way for institutions similar to the Humane Society: for in their works they have elucidated the principles on which they go, and furnished directions for the practice they favour. See **DEATH**, *Premature INTERMENT*, and **DROWNING**.

REAR, a term frequently used in composition, to denote something behind, or backwards, in respect of another; in opposition to *van*.

REAR of an ARMY, signifies, in general, the hindermost part of an army, battalion, regiment, or squadron; also the ground behind either.

REAR-Guard, is that body of an army which marches after the main-body; for the march of an army is always composed of an advance-guard, a main-body, and a rear-guard; the first and last commanded by a general. The old grand-guards of the camp always form the rear-guard of the army, and are to see that every thing come safe to the new camp.

REAR Half-files, are the three hindmost ranks of the battalion, when it is drawn up six deep.

REAR-Line, of an army encamped, is always 1200 feet at least from the centre line; both of which run parallel to the front line, as also to the reserve.

REAR-Rank, is the last rank of a battalion, when drawn up, and generally 16 or 18 feet from the centre-line when drawn in open order.

REASON, a faculty or power of the mind, whereby it distinguishes good from evil, truth from falsehood. See **METAPHYSICS**.

REASONING, **RATIOCINATION**, the exercise of that faculty of the mind called *reason*; or it is an act or operation of the mind, deducing some unknown proposition from other previous ones that are evident and known. See **LOGIC**, Part III.

REAUMUR (Rene Antoine Ferchault, Sieur de), a person distinguished for his laborious researches into natural knowledge, was born at Rochelle in 1683, of a family belonging to the law. After having finished his early studies in the place of his birth, he began a course of philosophy at Poitiers, and of civil law at Bourges; but soon relinquished the latter, to apply himself, according to his taste, to mathematics, physics, and natural history. Being come to Paris, he was received into the Academy of Sciences in 1708. From that hour he was wholly employed in natural history, to which his inclination

Rear.
Reaumur.

Reaumur. elination particularly led him, and his inquiries were not confined to any one part of it. His memoirs, his observations, his discoveries on the formation of shells, spiders, muscles, the marine flea, the berry which affords the purple colour, and on the cause of the numbness of the torpedo, excited the curiosity of the public, and early procured our author the character of an able, curious, and entertaining naturalist. Filled with zeal for the welfare and advantage of society, and the progress and perfection of arts, he endeavoured in all his researches to promote the public good. We were indebted to him for the discovery of the Turquoise mines in Languedoc. He also found out a substance, which is used to give false stones a colour, which is obtained

from a certain fish called in the French *Able* or *Ablete* * on account of its whiteness, and which is the *Bleak* or *Blay* of our writers †. His experiments on the art of turning iron into steel obtained him a pension of 12,000 livres; and this reward was continued to the Academy to support the expence which might accrue in this art.

He continued his inquiries on the art of making tin and porcelain ‡, and endeavoured to render our thermometers more useful than those of former times: he composed a curious history of rivers where gold dust is found in France; and gave so simple and easy a detail of the art of gathering this dust, that persons have been employed for that purpose.

He also made curious and important observations on the nature of flints, on the banks of fossil shells, from whence is obtained in Touraine an excellent manure for land; as likewise on birds and their preservation, on their method of building nests; on insects; and a great number of other subjects, not less curious than useful.

He imagined at first, that a certain varnish would keep eggs fresh; but the waste of time and money, &c. showed him the inconveniences of such a process. He afterwards adopted the method practised for time immemorial in Greece and the islands of the Archipelago, which is to steep or immerse eggs in oil, or melted fat; by this means, not being exposed to the air or to frost, they are well preserved, and contract no bad smell. Another experiment still more important, made by our author, was to introduce into France the art of hatching fowl and birds, as practised in Egypt, without covering the eggs. Active, sedulous, and attentive, he was early in his study, often at six in the morning. Exact in his experiments and observations, he let no circumstance escape him. His writings must be of great use to future philosophers. In society, he was distinguished through life for his modest and agreeable behaviour. His probity, benevolence, goodness of heart, and other amiable qualities, as well natural as acquired, endeared him to his countrymen. He died in the 76th year of his age, on the 18th of October 1757, and left this world filled with sentiments of piety. His death was the consequence of a fall, which happened at the castle of Barnardiére on the Maine, where he went to pass his vacation. He bequeathed to the Academy of Sciences his manuscripts and all his natural productions. His works are, 1. A very great number of memoirs and observations on different parts of natural history; they are printed in the collections of the Academy of Sciences. 2. A large work printed separately in 6 vols in 4to, intitled, A Natural History of Insects. This important

work contains a description of vast numbers of caterpillars, moths, gall insects, flies with two and four wings, lady-birds, and those ephemeron flies which live only in that form a few hours; and lastly, of those singular and wonderful insects which are called *polyper*, which being cut into several pieces, each piece lives, grows, and becomes an insect, and affords to our eyes a great number of prodigies*. The works of M. de Reaumur are exact, curious, interesting, and very ingenious. They are written with much candour, clearness, and elegance; but it must be acknowledged his manner is somewhat too diffuse. But we must not deceive the reader; he often raises our expectations, and does not give us all the satisfaction we promise ourselves from his writings. His method of raising poultry, in particular, rather disappoints us. He spared neither care, time, nor expence, to render it practicable: he flattered himself and his countrymen with the greatest hopes; but notwithstanding his assiduous industry, and vast charges, it proved abortive. The late M. l'Advocat recommended him to obtain better information from Egypt on the subject; and if possible to procure a person versed in the art to instruct him in it; but his death prevented the completion of the scheme. If the native of Egypt had arrived, showed M. de Reaumur a better method than his own, and practised it with success, as in his country, the community would have been benefited; on the other hand he would have seen, had it failed, that the climate of France was not proper for such experiments. M. Maillet, consul at Cairo, to whom Monsieur the regent had written to obtain the art, offered to send over a native of Egypt, if the government would pay the expence of his voyage, and allow him a pension of 1500 livres. M. Maillet rightly judged, when he preferred this method of proceeding. M. de Reaumur was not ignorant of the design; but he flattered himself, that his efforts would be successful without further aid, and thought he should acquire some honour. He certainly had great talents, industry, sagacity, and every other requisite which are necessary in such attempts; but it is morally impossible that a single man, in a different climate, can attain such knowledge in an art as those who live in a more favourable country, and have had the experience of many ages to profit by: however M. de Reaumur may have been unsuccessful, posterity is indebted to him for his repeated trials. He has removed some difficulties in the road, and those that travel it may discover what he only saw at a distance.

REAUMURIA, in botany: A genus of the pentagynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 13th order, *Succul-ntæ*. The calyx is hexaphyllous, and there are five petals; the capsule is unilocular, quinquevalved, and polyspermous.

REBATE, or **REBATEMENT**, in commerce, a term much used at Amsterdam for an abatement in the price of several commodities, when the buyer, instead of taking time, advances ready money.

REBATEMENT, in heraldry, a diminution or abatement, of the bearings in a coat of arms. See **ABATEMENT**.

REBELLION, *Rebellio*, among the Romans, was where those who had been formerly overcome in battle, and yielded to their subjection, made a second resistance: but with us it is generally used for the taking

Reaumur
Rebellion.

* See Po-
lyper.

* See Belon, 319; and Pennant's Zoology, vol. iii. p. 315.
† See Cyprinus, n° 9.
‡ See Porcelain.

Rebellious up of arms traiterously against the king, whether by natural subjects, or others when once subdued; and the word *rebel* is sometimes applied to him who wilfully breaks a law; also to a villein disobeying his lord.

||
Rebutter.

There is a difference between enemies and rebels. Enemies are those who are out of the king's allegiance: therefore subjects of the king, either in open war, or rebellion, are not the king's enemies, but traitors. And David Prince of Wales, who levied war against Edw. I. because he was within the allegiance of the king, had sentence pronounced against him as a traitor and rebel. Private persons may arm themselves to suppress rebels, enemies, &c.

REBELLIOUS ASSEMBLY, is a gathering together of twelve persons or more, intending or going about to practise or put in use unlawfully, of their own authority, any thing to change the law or statutes of the realm; or to destroy the inclosures of any ground, or banks of any fish-pond, pool, or conduit, to the intent the same shall lie waste and void; or to destroy the deer in any park, or any warren of conies, dove-houses, or fish in ponds; or any house, barns, mills, or bays; or to burn stacks of corn; or abate rents, or prices of victuals, &c.

REBUS, an enigmatical representation of some name, &c. by using figures or pictures instead of words, or parts of words. Camden mentions an instance of this absurd kind of wit in a gallant who expressed his love to a woman named *Rose Hill*, by painting in the border of his gown a rose, a hill, an eye, a loaf, and a well; which, in the style of the rebus, reads, "*Rose Hill I love well.*" This kind of wit was long practised by the great, who took the pains to find devices for their names. It was, however, happily ridiculed by Ben Johnson, in the humorous description of Abel Drugger's device in the *Alchemist*; by the *Spectator*, in the device of Jack of Newberry; at which time the rebus, being raised to sign-posts, was grown out of fashion at court.

REBUS is also used by the chemical writers sometimes to signify four milk, and sometimes for what they call the ultimate matter of which all bodies are composed.

REBUS, in heraldry, a coat of arms which bears an allusion to the name of the person; as three castles, for Castleton; three cups, for Butler; three conies, for Conisby; a kind of bearings which are of great antiquity.

REBUTTER (from the Fr. *bonter*, i. e. *repellere*, to put back or bar), is the answer of defendant to plaintiff's *surrejoinder*; and plaintiff's answer to the rebutter is called a *surrebutter*: but it is very rare the parties go so far in pleading.

Rebutter is also where a man by deed or fine grants to warranty any land or hereditament to another; and the person making the warranty, or his heir, sues him to whom the warranty is made, or his heir or assignee, for the same thing; if he who is so sued plead the deed or fine with warranty, and pray judgment, if the plaintiff shall be received to demand the thing which he ought to warrant to the party against the warranty in the deed, &c. this is called a *rebutter*. And if I grant to a tenant to hold without impeachment of waste, and afterwards implead him for waste done, he may debar me of this action by shewing my grant, which is a rebutter.

RECAPITULATION, is a summary, or a concise and transient enumeration of the principal things insisted on in the preceding discourse, whereby the force of the whole is collected into one view. See **ORATORY**, n^o 37 and 127.

RECEIPT, or **RECEIT**, in commerce, an acquittance, or discharge, in writing, intimating that the party has received a certain sum of money, either in full for the whole debt, or in part, or on account.

RECEIVER, in pneumatics, a glass vessel for containing the thing on which an experiment in the air-pump is to be made.

RECEIVER, *receptor* or *receptator*, in law, is commonly understood in a bad sense, and used for such as knowingly receive stolen goods from thieves, and conceal them. This crime is felony, and the punishment is transportation for 14 years.

RECENSIO was an account taken by the censors, every lustrum, of all the Roman people. It was a general survey, at which the equites, as well as the rest of the people, were to appear. New names were now put upon the censor's list, and old ones cancelled. The *recensio*, in short, was a more solemn and accurate sort of *probatio*, and answered the purpose of a review, by showing who were fit for military service.

RECEPTACULUM, in botany, one of the seven parts of fructification, defined by Linnæus to be the base which connects or supports the other parts.

RECEPTACULUM Chyli, or *Pecquet's Reservoir*, the reservoir or receptacle for the chyle, situated in the left side of the upper vertebra of the loins, under the aorta and the vessels of the left kidney.

RECHABITES, a kind of religious order among the ancient Jews, instituted by Jonadab the son of Rechab, comprehending only his own family and posterity. Their founder prescribed them three things: first, not to drink any wine; secondly, not to build any houses, but to dwell in tents; and thirdly, not to sow any corn, or plant vines.

The Rechabites observed these rules with great strictness, as appears from Jer. xxxv. 6, &c. Whence St Jerome, in his 13th epistle to Paulinus, calls them *monachi, monks*. Jonadab, their founder, lived under Jehoash, king of Judah, contemporary with Jehu king of Israel; his father Rechab, from whom his posterity were denominated, descended from Raguel or Jethro, father-in-law to Moses, who was a Kenite, or of the race of Ken: whence Kenite and Rechabite are used as synonymous in Scripture.

RECHEAT, in hunting, a lesson which the huntsman plays on the horn, when the hounds have lost their game, to call them back from pursuing a counter scent.

RECIPE, in medicine, a prescription, or remedy, to be taken by a patient: so called because always beginning with the word *recipe*, i. e. *take*; which is generally denoted by the abbreviature *R*.

RECIPROCAL, in general, something that is mutual, or which is returned equally on both sides, or that affects both parties alike.

RECIPROCAL Terms, among logicians, are those which have the same signification; and consequently are convertible, or may be used for each other.

RECIPROCAL, in mathematics, is applied to quantities

Reciprocal ties which multiplied together produce unity. Thus
 Recluse. $\frac{1}{x}$ and x , y and $\frac{1}{y}$, are reciprocal quantities. Likewise

$\frac{1}{x}$ is said to be the reciprocal of x , which is again the reciprocal of $\frac{1}{x}$.

RECIPROCAL Figures, in geometry, those which have the antecedents and consequents of the same ratio in both figures.

RECIPROCAL Proportion, is when in four numbers the fourth is less than the second by so much as the third is greater than the first, and *vice versa*. See PROPORTION and ARITHMETIC, chap. vi. Great use is made of this reciprocal proportion by Sir Isaac Newton and others, in demonstrating the laws of motion.

RECITAL, in law, means the rehearsal or making mention in a deed or writing of something which has been done before.

RECITATIVO, or RECITATIVE, in music, a kind of singing, that differs but little from ordinary pronunciation; such as that in which the several parts of the liturgy are rehearsed in cathedrals; or that wherein the actors commonly deliver themselves on the theatre at the opera, when they are to express some action or passion; to relate some event; or reveal some design.

RECKENHAUSEN, a strong town of Cologne, in Germany, in the middle territory of that name. The abbess of its nunnery has power of punishing offenders with death, and she alone is obliged to the vow of chastity.

RECKONING, or a Ship's RECKONING, in navigation, is that account whereby at any time it may be known where the ship is, and on what course or courses she is to steer, in order to gain her port; and that account taken from the log-board is called the *dead reckoning*. See NAVIGATION.

RECLAIMING, or RECLAMING, in our ancient customs, a lord's pursuing, prosecuting, and recalling, his vassal, who had gone to live in another place without his permission.

Reclaiming is also used for the demanding of a person, or thing, to be delivered up to the prince or state to which it properly belongs; when, by any irregular means, it is come into another's possession.

RECLAIMING, in falconry, is taming a hawk, &c. and making her gentle and familiar.

A partridge is said to reclaim, when she calls her young ones together, upon their scattering too much from her.

RECLINATION of a plane in dialling. See DIALLING.

RECLUSE, among the Papists, a person shut up in a small cell of an hermitage, or monastery, and cut off, not only from all conversation with the world, but even with the house. This is a kind of voluntary imprisonment, from a motive either of devotion or penance.

The word is also applied to incontinent wives, whom their husbands procure to be thus kept in perpetual imprisonment in some religious house.

Recluses were anciently very numerous. They took an oath never to stir out of their retreat: and having entered it, the bishop set his seal upon the door; and the recluse was to have every thing necessary for the support of life conveyed to him through a window. If

he was a priest, he was allowed a small oratory, with a window, which looked into the church, through which he might make his offerings at the mass, hear the singing, and answer those who spoke to him; but this window had curtains before it, so that he could not be seen. He was allowed a little garden, adjoining to his cell, in which he might plant a few herbs, and breathe a little fresh air. If he had disciples, their cells were contiguous to his, with only a window of communication, through which they conveyed necessaries to him, and received his instructions. If a recluse fell sick, his door might be opened for persons to come in and assist him, but he himself was not to stir out.

RECOGNITION, in law, an acknowledgment; a word particularly used in our law-books for the first chapter of the statute 1 Jac. I. by which the parliament acknowledged, that, after the death of queen Elisabeth, the crown had rightfully descended to king James.

RECOGNIZANCE, in law, is an obligation of record, which a man enters into before some court of record or magistrate duly authorized, with condition to do some particular act; as to appear at the assizes, to keep the peace, to pay a debt, or the like. It is in most respects like another bond: the difference being chiefly this, that the bond is the creation of a fresh debt or obligation *de novo*, the recognizance is an acknowledgment of a former debt upon record; the form whereof is, "that A. B. doth acknowledge to owe to our lord the king, to the plaintiff, to C. D. or the like, the sum of ten pounds," with condition to be void on performance of the thing stipulated: in which case the king, the plaintiff, C. D. &c. is called the cognizee, *is cui cognoscitur*; as he that enters into the recognizance is called the cognizor, *is qui cognoscit*. This being certified to, or taken by the officer of some court, is witnessed only by the record of that court, and not by the party's seal: so that it is not in strict propriety a deed, though the effects of it are greater than a common obligation; being allowed a priority in point of payment, and binding the lands of the cognizor from the time of enrolment on record.

RECOIL, or REBOUND, the starting backward of a fire-arm after an explosion. Merfennus tells us, that a cannon 12 feet in length, weighing 6400 lb. gives a ball of 24 lb. an uniform velocity of 640 feet per second. Putting, therefore, $W = 6400$, $w = 14$, $V = 640$, and $v =$ the velocity with which the cannon recoils; we shall have (because the momentums of the cannon and ball are equal) $Wv = wV$; and so $v = \frac{wV}{W} =$

$\frac{24 \times 64}{6400} = 2,4$; that is, it would recoil at the rate of $2\frac{4}{10}$ feet per second, if free to move.

RECOLLECTION, a mode of thinking, by which ideas sought after by the mind are found and brought to view.

RECONNOITRE, in military affairs, implies to view and examine the state of things, in order to make a report thereof.

Parties ordered to reconnoitre are to observe the country and the enemy; to remark the routes, conveniences, and inconveniences of the first; the position, march, or forces of the second. In either case, they should have an expert geographer, capable of taking plans

Recogni-
tion
||
Recon-
noitre.

Record
||
Recovery.

plans readily: he should be the best mounted of the whole, in case the enemy happen to scatter the escorte, that he may save his works and ideas. See WAR.

RECORD, an authentic testimony in writing, contained in rolls of parchment, and preserved in a court of record. See COURT.

Trial by RECORD, a species of trial which is used only in one particular instance: and that is where a matter of record is pleaded in any action, as a fine, a judgment, or the like; and the opposite party pleads, *nul tiel record*, that there is no such matter of record existing. Upon this, issue is tendered and joined in the following form, "and this he prays may be inquired of by the record, and the other doth the like;" and hereupon the party pleading the record has a day given him to bring it in, and proclamation is made in court for him to "bring forth the record by him in pleading alleged, or else he shall be condemned;" and, on his failure, his antagonist shall have judgment to recover. The trial, therefore, of this issue, is merely by the record: for, as Sir Edward Coke observes, a record or enrolment is a monument of so high a nature, and importeth in itself such absolute verity, that if it be pleaded that there is no such record, it shall not receive any trial by witness, jury, or otherwise, but only by itself. Thus titles of nobility, as whether earl or not earl, baron or not baron, shall be tried by the king's writ or patent only, which is matter of record. Also in case of an alien, whether alien friend or enemy, shall be tried by the league or treaty between his sovereign and ours; for every league or treaty is of record. And also, whether a manor be held in ancient demesne or not, shall be tried by the record of domesday in the king's exchequer.

RECORDER, a person whom the mayor and other magistrates of a city or corporation associate to them, for their better direction in matters of justice and proceedings in law; on which account this person is generally a counsellor, or other person well skilled in the law.

The recorder of London is chosen by the lord mayor and aldermen; and as he is held to be the mouth of the city, delivers the judgment of the courts therein, and records and certifies the city-customs. See LONDON, n^o 38.

RECOVERY, or *Common Recovery*, in English law, a species of assurance by matter of record; concerning the original of which it must be remarked, that common recoveries were invented by the ecclesiastics to elude the statutes of mortmain (see TAIL); and afterwards encouraged by the finesse of the courts of law in 12 Edward IV. in order to put an end to all fettered inheritances, and bar not only estates-tail, but also all remainders and reversions expectant thereon. We have here, therefore, only to consider, first, the nature of a common recovery; and, secondly, its force and effect.

1. A common recovery is a suit or action, either actual or fictitious: and in it the lands are recovered against the tenant of the freehold; which recovery, being a supposed adjudication of the right, binds all persons, and vests a free and absolute fee-simple in the recoverer. To explain this as clearly and concisely as possible, let us, in the first place, suppose David Edwards to be tenant of the freehold, and desirous to suffer a common recovery, in order to bar all entails, remain-

ders, and reversions, and to convey the same in fee-simple, to Francis Golding. To effect this, Golding is to bring an action against him for the lands; and he accordingly sues out a writ called a *præcipe quod reddat*, because these were its initial or most operative words when the law-proceedings were in Latin. In this writ the demandant Golding alleges, that the defendant Edwards (here called the tenant) has no legal title to the land; but that he came into possession of it after one Hugh Hunt had turned the demandant out of it. The subsequent proceedings are made up into a record or recovery roll, in which the writ and complaint of the demandant are first recited: whereupon the tenant appears, and calls upon one Jacob Morland, who is supposed, at the original purchase, to have warranted the title to the tenant; and thereupon he prays, that the said Jacob Morland may be called in to defend the title which he so warranted. This is called the *voucher*, "vocatio," or calling of Jacob Morland to warranty; and Morland is called the *vouchee*. Upon this Jacob Morland, the vouchee, appears, is impleaded, and defends the title. Whereupon Golding the demandant desires leave of the court to imparl, or confer with the vouchee in private; which is (as usual) allowed him. And soon afterwards the demandant Golding returns to court; but Morland the vouchee disappears, or makes default. Whereupon judgment is given for the demandant Golding, now called the *recoverer*, to recover the lands in question against the tenant Edwards, who is now the *recoveree*: and Edwards has judgment to recover of Jacob Morland lands of equal value, in recompense for the lands so warranted by him, and now lost by his default; which is agreeable to the doctrine of warranty mentioned in the preceding chapter. This is called the *recompense*, or *recovery in value*. But Jacob Morland having no lands of his own, being usually the crier of the court, who, from being frequently thus vouched, is called the *common vouchee*, it is plain that Edwards has only a nominal recompense for the lands so recovered against him by Golding; which lands are now absolutely vested in the said recoverer by judgment of law, and seisin thereof is delivered by the sheriff of the county. So that this collusive recovery operates merely in the nature of a conveyance in fee-simple, from Edwards the tenant in tail to Golding the purchaser.

The recovery here described, is with a single voucher only; but sometimes it is with a double, treble, or farther voucher, as the exigency of the case may require. And indeed it is now usual always to have a recovery with double voucher at the least: by first conveying an estate of freehold to any indifferent person, against whom the *præcipe* is brought; and then he vouches the tenant in tail, who vouches over the common vouchee. For, if a recovery be had immediately against tenant in tail, it bars only such estate in the premises of which he is then actually seised; whereas if the recovery be had against another person, and the tenant in tail be vouched, it bars every latent right and interest which he may have in the lands recovered. If Edwards therefore be tenant of the freehold in possession, and John Barker be tenant in tail in remainder, here Edwards doth first vouch Barker, and then Barker vouches Jacob Morland the common vouchee; who is always the last person vouched, and always makes default; whereby the demandant Golding recovers the land against the tenant

Edwards

Blackst.
Comment.

Recovery. Edwards, and Edwards recovers a recompense of equal value against Barker the first vouchee; who recovers the like against Morland the common vouchee, against whom such ideal recovery in value is always ultimately awarded.

This supposed recompense in value is the reason why the issue in tail is held to be barred by a common recovery. For, if the recoveree should obtain a recompense in lands from the common vouchee (which there is a possibility in contemplation of law, though a very improbable one, of his doing), these lands would supply the place of those so recovered from him by collusion, and would descend to the issue in tail. The reason will also hold with equal force as to most remaindermen and reversioners, to whom the possibility will remain and revert, as a full recompense for the reality which they were otherwise entitled to: but it will not always hold; and therefore, as Pigott says, the judges have been even *astuti*, in inventing other reasons to maintain the authority of recoveries. And, in particular, it hath been said, that though the estate-tail is gone from the recoveree; yet it is not destroyed, but only transferred, and still subsists; and will ever continue to subsist (by construction of law) in the recoveror, his heirs and assigns: and as the estate-tail so continues to subsist for ever, the remainders or reversions expectant on the determination of such estate-tail can never take place.

To such awkward shifts, such subtle refinements, and such strange reasoning, were our ancestors obliged to have recourse, in order to get the better of that stubborn statute *de donis*. The design for which these contrivances were set on foot, was certainly laudable; the unrivetting the fetters of estates-tail, which were attended with a legion of mischiefs to the commonwealth: but, while we applaud the end, we cannot but admire the means. Our modern courts of justice have indeed adopted a more manly way of treating the subject; by considering common recoveries in no other light than as the formal mode of conveyance by which tenant in tail is enabled to aliene his lands. But, since the ill consequences of fettered inheritances are now generally seen and allowed, and of course the utility and expedience of setting them at liberty are apparent, it hath often been wished that the process of this conveyance was shortened, and rendered less subject to niceties, by either totally repealing the statute *de donis*; which perhaps, by reviving the old doctrine of conditional fees, might give birth to many litigations: or by vesting in every tenant in tail, of full age, the same absolute fee-simple at once, which now he may obtain whenever he pleases, by the collusive fiction of a common recovery; though this might possibly bear hard upon those in remainder or reversion, by abridging the chances they would otherwise frequently have, as no recovery can be suffered in the intervals between term and term, which sometimes continue for near five months together: or, lastly, by empowering the tenant in tail to bar the estate-tail by a solemn deed, to be made in term-time, and enrolled in some court of record; which is liable to neither of the other objections, and is warranted not only by the usage of our American colonies, but by the precedent of the statute 21 Jac. I. c. 19. which, in the case of a bankrupt tenant in tail, empowers his commissioners to sell the estate at any time, by deed indented and enrolled. And if, in so national

a concern, the emoluments of the officers concerned in passing recoveries are thought to be worthy attention, those might be provided for in the fees to be paid upon each enrollment.

2. The force and effect of common recoveries may appear, from what has been said, to be an absolute bar not only of all estates tail, but of remainders and reversions expectant on the determination of such estates. So that a tenant in tail may, by this method of assurance, convey the lands held in tail to the recoveror, his heirs and assigns, absolutely free and discharged of all conditions and limitations in tail, and of all remainders and reversions. But, by statute 34 & 35 H. VIII. c. 20. no recovery had against tenant in tail of the king's gift, whereof the remainder or reversion is in the king, shall bar such estate-tail, or the remainder or reversion of the crown. And by the statute 11 H. VII. c. 20. no woman, after her husband's death, shall suffer a recovery of lands settled on her by her husband, or settled on her husband and her by any of his ancestors. And by statute 14 Eliz. c. 8. no tenant for life, of any sort, can suffer a recovery so as to bind them in remainder or reversion. For which reason, if there be tenant for life, with remainder in tail, and other remainders over, and the tenant for life is desirous to suffer a valid recovery, either he, or the tenant to the *præcipe* by him made, must vouch the remainder-man in tail, otherwise the recovery is void: but if he does vouch such remainder-man, and he appears and vouches the common vouchee, it is then good; for if a man be vouched and appears, and suffers the recovery to be had, it is as effectual to bar the estate-tail as if he himself were the recoveree.

In all recoveries, it is necessary that the recoveror, or tenant to the *præcipe*, as he is usually called, be actually seised of the freehold, else the recovery is void. For all actions to recover the seisin of lands must be brought against the actual tenant of the freehold, else the suit will lose its effect; since the freehold cannot be recovered of him who has it not. And, though these recoveries are in themselves fabulous and fictitious, yet it is necessary that there be *actores fabule*, properly qualified. But the nicety thought by some modern practitioners to be requisite in conveying the legal freehold, in order to make a good tenant to the *præcipe*, is removed by the provisions of the statute 14 Geo. II. c. 20. which enacts, with a retrospect and conformity to the ancient rule of law, that, though the legal freehold be vested in leasees, yet those who are entitled to the next freehold estate in remainder, or reversion, may make a good tenant to the *præcipe*; and that, though the deed or fine which creates such tenant be subsequent to the judgment of recovery, yet if it be in the same term, the recovery shall be valid in law: and that though the recovery itself do not appear to be entered, or be not regularly entered on record, yet the deed to make a tenant to the *præcipe*, and declare the uses of the recovery, shall after a possession of 20 years be sufficient evidence on behalf of a purchaser for valuable consideration, that such recovery was duly suffered.

RECOVERY of persons drowned, or apparently dead. See RE-ANIMATION, and the articles there referred to.

RECREANT, COWARDLY, Faint-hearted; formerly a word very reproachful. See BATTLE.

RECREMENT, in chemistry, some superfluous matter separated from some other that is useful; in which

Recovery,
Recrement.

Recrimination which sense it is the same with *scoria, faces, and excrements*.

Rectory.

RECRIMINATION, in law, an accusation brought by the accused against the accuser upon the same fact.

RECRUITS, in military affairs, new-raised soldiers designed to supply the place of those who have lost their lives in the service, or who are disabled by age or wounds.

RECTANGLE, in geometry, the same with a right-angled parallelogram. See **GEOMETRY**.

RECTIFICATION, in chemistry, is nothing but the repetition of a distillation or sublimation several times, in order to render the substance purer, finer, and freer from aqueous and earthy parts.

RECTIFICATION of Spirits. See **DISTILLATION**.

RECTIFIER, in navigation, an instrument consisting of two parts, which are two circles, either laid one upon, or let into the other, and so fastened together in their centres, that they represent two compasses, one fixed, the other moveable; each of them divided into the 32 points of the compass, and 360°, and numbered both ways, from the north and the south, ending at the east and west, in 90°.

The fixed compass represents the horizon, in which the north and all the other points of the compass are fixed and immoveable.

The moveable compass represents the mariner's compass; in which the north and all other points are liable to variation.

In the centre of the moveable compass is fastened a silk thread, long enough to reach the outside of the fixed compass. But if the instrument be made of wood, there is an index instead of the thread.

Its use is to find the variation of the compass, to rectify the course at sea; having the amplitude or azimuth given.

RECTIFYING the GLOBE. See **GEOGRAPHY**, p. 656.

RECTILINEAR, in geometry, right-lined; thus figures whose perimeter consists of right lines, are said to be rectilinear.

RECTITUDE, in philosophy, refers either to the act of judging or of willing; and therefore whatever comes under the denomination of rectitude, is either what is true or what is good, these being the only objects about which the mind exercises its two faculties of judging and willing.

Moral rectitude, or uprightness, is the choosing and pursuing those things which the mind, upon due inquiry and attention, clearly perceives to be good; and avoiding those that are evil. See *MORAL Philosophy*.

RECTOR, a term applied to several persons whose offices are very different: as, 1. The rector of a parish is a clergyman that has the charge and cure of a parish, and possesses all the tithes, &c. 2. The same name is also given to the chief elective officer in several foreign universities, particularly in that of Paris, and also in those of Scotland. It is also applied to the head master of large schools in Scotland, as in the high school of Edinburgh. 3. Rector is also used in several convents for the superior officer who governs the house: and the Jesuits give this name to the superiors of such of their houses as are either seminaries or colleges.

RECTORY, a parish-church, parsonage, or spiritual living, with all its rights, tithes, and glebes.

RECTORY is also sometimes used for the rector's mansion or parsonage-house.

RECTUM, in anatomy, the third and last of the large intestines or guts. See **ANATOMY**, n° 93.

RECTUS, in anatomy, a name common to several pairs of muscles, so called on account of the straightness of their fibres.

RECUPERATORES, among the Romans, were commissioners appointed to take cognizance of private matters in dispute, between the subjects of the state and foreigners, and to take care that the former had justice done them. It came at last to be used for commissioners, to whom the prætor referred the determination of any affair between one subject and another.

RECURRENTS, in anatomy, a name given to several large branches of nerves sent out by the par vagum from the upper part of the thorax to the larynx.

RECURVIROSTRA, in ornithology; a genus belonging to the order of grallæ of Linnæus, and that of palmipedes of Pennant and Latham. The bill is long, subulated, bent back, sharp and flexible at the point. The feet are webbed, and furnished with three toes forwards, and a short one behind. Mr Latham notes of this genus three species, viz. the Avosetta, or the one commonly known, the Americana, and the Alba. This last, it is probable, has some affinity to the Americana. The recurvirostra avosetta is about the size of a lapwing in body, but has very long legs. The substance of the bill is soft, and almost membranous at its tip; it is thin, weak, slender, compressed horizontally, and incapable of defence or effort. These birds are variegated with black and white, and during the winter are frequent on the eastern shores of Great Britain. They visit also the Severn, and sometimes the pools of Shropshire. They feed on worms and insects, which they scoop out of the sand with their bills. They lay two eggs, white, with a greenish hue, and large spots of black; these eggs are about the size of a pigeon's. They are found also in various parts of the continent of Europe, in Russia, Denmark, and Sweden, but they are not numerous. They are also found in Siberia, but oftener about the salt lakes of the Tartarian desert, and about the Caspian sea. They are found likewise on the coasts of Picardy in France in April and November, and at Orleans, but rarely. In breeding-time they are very plentiful on the coasts of Bas Poictou. They do not appear to wander farther south in Europe than Italy. Whether from timidity or address, the avoset shuns snares, and is not easily taken. The American avoset is rather larger and longer than the last. The bill is similar, and its colour black: the forehead is dusky white: the head, neck, and upper part of the breast, are of a deep cream-colour: the lower parts of the neck behind white: the back is black, and the under parts from the breast pure white: the wings are partly black, partly white, and partly ash-coloured. These birds inhabit North America, and were found by Dampier in Shark's Bay, on the coast of New Holland. See Plate CCCCXXXV.

The recurvirostra, or scolopax alba, is about 14 inches and a quarter long, its colour white, the inferior coverts of its wings dusky, its bill orange, its legs brown. Edwards remarks, that the bill of this bird is bent upwards, as in the avoset; its bill black at the tip, and orange the rest of its length; all the plumage is white, except

Rectory
||
Recurvirostra.

Reculants, except a tint of yellowish on the great quills of the wing and of the tail. Edwards supposes, that the whiteness is produced by the cold climate of Hudson's Bay, from which he received it, and that they resume their brown feathers during the summer. It appears that several species of this bird have spread further into America, and have even reached the southern provinces: for Sloane found our third species in Jamaica; and Fernandez seems to indicate two of them in New Spain, by the names *chiquatoto* and *elototo*; the former being like our woodcock, and the latter lodging under the stalks of maize.

A bird of this kind, Mr Latham says, was sent from Hudson's Bay, and from the figure, has every appearance of an avoet: however, in Edwards's plate, the toes appear cloven to the bottom; a circumstance seeming to overturn the supposition, and only to be authenticated when other specimens shall have come under the eye of the well-informed naturalist.

RECUSANTS, such persons as acknowledge the pope to be the supreme head of the church, and refuse to acknowledge the king's supremacy; who are hence called *Popish recusants*. The penal laws against Papists are now abolished in Britain and in Ireland; and in all probability they will quickly be allowed the amplest privileges.

RED, one of the colours called *simple* or *primary*: being one of the shades into which the light naturally divides itself when refracted through a prism. See **CHROMATICS**.

RED, in dyeing, see that article.—Some reckon six kinds or casts of red, viz. scarlet-red, crimson-red, madder-red, half-grain red, lively orange-red, and scarlet of cochineal: but it is easy to see that there can be but one proper species of red; namely, the reflection of the light exactly in such a manner as it is refracted by the prism; all other shades being adulterations of that pure colour, with yellow, brown, &c.

RED, in heraldry. See **GULES**.

RED-Bird. See **MUSCICAPA**, n° 7.

RED-Breast, in ornithology. See **MOTACILLA**.

RED-Book of the exchequer, an ancient record or manuscript volume, in the keeping of the king's remembrancer, containing divers miscellany treatises relating to the times before the conquest.

RED-Lead. See **CHEMISTRY**, n° 1213.

RED Precipitate of Mercury. See **CHEMISTRY**, n° 764.

RED-Russia, or *Little Russia*, a province of Poland, bounded on the west by Upper Poland, on the north by Lithuania, on the east by the country of the Little Tartars, and on the south by Moldavia, Transylvania, and a part of Hungary. It comprehends Russia properly so called, Volhinia, and Podolia. It is about 650 miles in length, and from 150 to 250 in breadth. It consists chiefly of large fields, but little cultivated on account of the frequent inroads of the Tartars, and because there is no water-carriage. It had the name of *Red Russia*, from the colour of the hair of its inhabitants. Russia, properly so called, comprehends the three palatinates of Leopold or Lemburg, Belsko, and Chelm.

RED-Sea, or *Arabic Gulph*, so much celebrated in sacred history, separates Arabia from Upper Ethiopia and part of Egypt. This sea is 350 leagues in length

and 40 in breadth. As no river falls into it of sufficient force to counteract the influence of the tide, it is more affected by the motions of the great ocean than any of the inland seas nearly in the same latitude. It is not much exposed to tempests: the winds usually blow from north to south, and being periodical, like the monsoons of India, invariably determine the season of sailing into or out of this sea. It is divided into two gulphs; that to the east was called the *Ælanitic gulph*, from the city *Ælana* at the north end of it; and that to the west the *Heroopolitic*, from the city of *Heroopolis*; the former of which belongs to Arabia, and the latter to Egypt.

Mr Bruce has made many observations on this sea, which are worthy of notice.—With regard to the name, he says it was certainly derived from Edom or Esau the son of Jacob; though in another place he says, he wonders that writers have not rather supposed it to have got the epithet of *Red*, from the colour of the sand on its coasts, than for other reasons they have alleged. With regard to any redness in the water itself, or in the bottom, which some have asserted, our traveller assures us that there is no such thing. It is more difficult to assign a reason for the Hebrew name of it, which signifies the *Sea of Weeds*; as he never saw a weed throughout the whole extent of it. “Indeed, (says he) upon the slightest consideration, it will occur to any one, that a narrow gulph, under the immediate influence of the monsoons, blowing from contrary points six months each year, would have too much agitation to produce such vegetables, seldom found but in stagnant waters, and seldom, if ever, found in salt ones. My opinion then is, that it is from the large trees or plants of white coral, spread everywhere over the bottom of the Red Sea, perfectly in imitation of plants on land, that the sea has obtained this name.—I saw one of these, which, from a root nearly central, threw out ramifications of an almost circular form, measuring 26 feet every way.”

Our author has also made many useful observations on the navigation of this sea. “All the western shore (he says) is bold, and has more depth of water than the east; but on this side there is neither anchoring ground nor shoals. It is rocky, with a considerable depth of water everywhere; and there are a number of sunken rocks, which, though not visible, are sufficiently near the surface to destroy a large ship.” The cause of this, in Mr Bruce's opinion, is, that the mountains on the side of Abyssinia and Egypt are all of hard stone, porphyry, many different kinds of marble, granite, alabaster, and basalt. These being all composed of solid materials, therefore, can part with very little dust or sand, which might otherwise be blown from them into the sea. On the opposite coast, viz. that of Hejaz and Tahamah, on the Arabian side, the whole consists of moving sands; a large quantity of which is blown from the south-east by the dry winter monsoons; which being lodged among the rocks on that side, and confined there by the north-east or summer monsoon, which is in a contrary direction, hinders them from coming over to the Egyptian side. Hence the western coast is full of sunken rocks for want of sand to cover them, with which they would otherwise become islands. They are naked and bare all round, with sharp points like spears; while, on the east-side, every rock becomes

Red Sea.

Red Sea. an island, and every two or three islands become an harbour. On the ends of the principal of these harbours the people have piled up great heaps of stones to serve as signals: "and it is in these (says Mr Bruce) that the large vessels from Cairo to Jidda, equal in size to our large 74 gun-ships (but from the cisterns of mason-work built within for holding water, I suppose double their weight), after navigating their portion of the channel in the day-time, come safely and quietly to at four o'clock in the afternoon; and in these little harbours pass the night, to sail into the channel again next morning."

The western channel of the Red Sea was chosen, in the days of the Ptolemies, for the track of the Indian and African. These monarchs erected a great number of cities all along the western coast; and notwithstanding the dangers of the navigation, we do not hear that it was ever abandoned on account of them.

From the observations made by our author on the navigation of the Red Sea, he undertakes to point out a safe passage for large ships to the gulph of Suez, so that they may be able to judge of the propriety of their own course themselves, without trusting implicitly to the pilots they meet with, who are often very ignorant of their profession. This sea, according to Mr Bruce, may be divided into four parts, of which the channel occupies two, till near the latitude of 26° , or that of Cossair. On the west it is deep water, with many rocks; and on the east it is full of islands, as has been already mentioned. Between these islands there are channels and harbours of deep water, where ships may be protected in any wind; but a pilot is necessary in sailing among these from Mocha to Suez, and the voyage besides can be continued only during part of the day. Ships bound to Suez without the consent of the sheriffe of Mecca, that is, without any intention of selling their cargo at Jidda, or paying custom there, ought to take in their fresh water at Mocha; or if there be any reason against this, a few hours will carry them to Azab or Saba on the Abyssinian coast, where they may be plentifully supplied: but it must be remembered, "that the people here are *Galla*, the most treacherous and villanous wretches on earth." Here not only water may be procured, but plenty of sheep, goats, with some myrrh, and incense in the proper season.—Great caution, however, must be used in dealing with the people, as even those of Mocha, who are absolutely necessary to them in their commercial dealings, cannot trust them without surety or hostages. Not many years ago, the surgeon and mate of the *Elgin East India* man, with several other sailors, were murdered by these savages as they went ashore to purchase myrrh, though they had a letter of safe conduct from the shekh.

To such as do not want to be known, our author recommends a low black island on the coast of Arabia, named *Camaran*, in latitude $15^{\circ} 30'$. It is distinguished by a white house or fortress on the west end of it; where water is to be had in still greater plenty than at Azab; but no provisions, or such only as are very bad, can be procured. If it is necessary not to be seen at all on the coast, the island of *Foosht* is recommended by our author as having excellent water, with a faint or monk, whose office is to keep the wells clean. This is one of the chain of islands which stretches almost across the gulph from *Loheia* to *Masuah*, and from ac-

tual observation by Mr Bruce, is found to be situated Red Sea in N. Lat. $15^{\circ} 59' 43''$. E. Long. $42^{\circ} 47'$. From this to *Yambo* there is a safe watering-place; and there is an absolute necessity for having a pilot before you come to *Ras Mahomet*; because, over the *Ælanitic* gulph, the mountains of *Aucha*, and the Cape itself, there is often a thick haze which lasts for many days together, and a number of ships are lost by mistaking the eastern bay or *Ælanitic* gulph for the entrance of the gulph of *Suez*; the former has a ridge of rocks nearly across it. After reaching *Sheduan*, a large island, about three leagues farther in a north by west direction, there is a bare rock distinguished by no particular name; but so situated that ships ought not to come within three leagues of it. This rock is to be left to the westward at the distance just mentioned; after passing which you meet with shoals forming a pretty broad channel, with soundings from 15 to 30 fathoms; and again, on standing directly for *Tor*, there are two other oval sands with sunk rocks in the channel, between which you are to steer. *Tor* may be known at a distance by two hills that stand near the water side; which, in clear weather, may be seen six leagues off. Just to the south-east of these is the town and harbour, where there are some palm-trees about the houses, the more remarkable, as being the first that are seen on the coast. The soundings in the way to *Tor* harbour are clean and regular; "and, by giving the beacon a small birth on the larboard hand, you may haul in a little to the northward, and anchor in five or six fathom." In spring-tides, it is high water at *Tor* nearly about 12 o'clock: in the middle of the gulph there is no perceptible tide, but at the sides it runs at the rate of more than two knots in the hour. *Tor* itself is but a small village, with a convent of monks belonging to those of *Mount Sinai*. It was taken by *Don John de Castro*, and fortified soon after its discovery by the Portuguese; but has never since been a place of any consideration; serving now only for a watering place to the ships trading to or from *Suez*.—From this place there is a distinct view of mounts *Horeb* and *Sinai*, which appear above and behind the others, with their tops frequently covered with snow in the winter.

Mr Bruce next proceeds to consider some questions which may be reckoned matters of curiosity rather than any thing else. One of these is concerning the level of the water of this sea itself, which has been supposed several feet above that of the Mediterranean. "To this (says our author) I answer, that the fact has been supposed to be so by antiquity, and alleged as a reason why *Ptolemy's* canal was made from the bottom of the *Heroopolitic* gulph rather than brought due north across the isthmus of *Suez*; in which last case it was feared it would submerge a great part of *Asia Minor*. But who has ever attempted to verify this by experiment? or who is capable of settling the difference of levels, amounting, as supposed, to some feet and inches, between two points 120 miles distant from each other, over a desert that has no settled surface, but is changing its height every day? Besides, since all seas are in fact but one, what is it that hinders the Indian ocean to flow to its level? What is it that keeps the Indian ocean up? Till this last branch of the question is resolved, I shall take it for granted that no such difference of

Red Sea of level exists, whatever Ptolemy's engineers might have pretended to him; because, to suppose it fact, is to suppose the violation of one very material law of nature."

Reddle.

The next thing considered by our author is the passage of the Israelites through the Red Sea. At the place where he supposes the passage to have been, the sea is not quite four leagues broad, so that it might easily have been crossed in one night without any miracle. There is about 14 fathom water in the channel, and 9 at the sides, with good anchorage everywhere; the farthest side is a low sandy coast, and a very easy landing place. "The draught of the bottom of the gulph (says he) given by Dr Pococke, is very erroneous in every part of it. It was proposed to Mr Niebuhr, when in Egypt, to inquire upon the spot, whether there were not some ridges of rocks where the water was shallow, so that an army at particular times might pass over? Secondly, whether the Etesian winds, which blow strongly all summer from the north-west, could not blow so violently against the sea, as to keep it back on a heap, so that the Israelites might have passed without a miracle? And a copy of these queries was left for me to join my inquiries likewise. But I must confess, however learned the gentlemen were who proposed these doubts, I did not think they merited any attention to solve them. If the Etesian winds, blowing from the north-west in summer, could heap up the sea as a wall on the right or to the south, of 50 feet high, still the difficulty would remain of building the wall on the left hand or to the north. Besides, water standing in that position for a day, must have lost the nature of a fluid. Whence came that cohesion of particles that hindered that wall to escape at the sides? This is as great a miracle as that of Moses. If the Etesian winds had done this once, they must have repeated it many a time before and since, from the same causes. Yet Diodorus Siculus says, the Troglodytes, the indigenous inhabitants of that very spot, had a tradition from father to son, from their very earliest and remotest ages, that once this division of the sea did happen there; and that, after leaving the bottom some time dry, the sea again came back and covered it with great fury. The words of this author are of the most remarkable kind. We cannot think this heathen is writing in favour of revelation. He knew not Moses, nor says a word about Pharaoh and his host; but records the miracle of the division of the sea in words nearly as strong as those of Moses, from the mouths of unbiassed undesigning pagans."

Red-Shank, in ornithology. See SCOLOPAX.

Red-Start, a species of MOTACILLA.

Red-Wing. See TURDUS.

REDANS, in field fortification. See the article REDENS.

REDDENDUM, in law, is used substantively for the clause in a lease wherein the rent is reserved to the lessor. The proper place for it is next after the limitation of estate.

REDDITIO, was the third part of the sacrifice of the heathens, and consisted of the solemn act of putting in again the entrails of the victims, after they had been religiously inspected. See SACRIFICE.

REDDLE, a soft, heavy, red marle, of great use in colouring; and being washed and freed from sand,

is often sold by our druggists under the name of *bole armenic*. Redemption
Reduction

REDEMPTION, in law, a faculty or right of re-entering upon lands, &c. that have been sold and assigned, upon reimbursing the purchase-money with legal costs.

REDEMPTION, in theology, denotes the recovery of mankind from sin and death, by the obedience and sacrifice of Christ, who on this account is called the *Redeemer of the world*. See THEOLOGY.

REDENS, **REDANS**, or *Redant*, in fortification, a kind of work indented in form of the teeth of a saw, with salient and re-entering angles; to the end that one part may flank or defend another. It is likewise called *saw-work* and *indented work*. The lines or faces in this flank one another.

Redens are used in fortifying walls, where it is not necessary to be at the expence of building bastions; as when they stand on the side of a river running through a garrison town, a marsh, the sea, &c. But the fault of such fortification is, that the besiegers from one battery may ruin both the sides of the tenaille or front of a place, and make an assault without fear of being enfiladed, since the defences are mined. The parapet of the corridor is likewise often redented or carried on by the way of redens. The redens was used before bastions were invented, and some people think them preferable.

REDI (Francis), an Italian physician and polite scholar, was born at Arezzo in Tuscany in 1626. His ingenuity and learning recommended him to the office of first physician to Ferdinand II. duke of Tuscany; and he contributed not a little toward the compiling of the Dictionary of La Crusca. He wrote upon vipers, upon the generation of insects, and composed a good deal of poetry. All his writings are in Italian; and his language is so fine and pure, that the authors of the Dictionary of La Crusca have often cited them as standards of perfection. He died in 1697.

REDOUBT, in fortification, a small square fort, without any defence but in front; used in trenches, lines of circumvallation, contravallation, and approach; as also for the lodgings of corps-de-gard, and to defend passages.

REDUCTION, in the schools, a manner of bringing a term or proposition, which was before opposite to some other, to be equivalent to it.

REDUCTION, in arithmetic, that rule whereby numbers of different denominations are brought into one denomination. See ARITHMETIC.

REDUCTION of Equations, in algebra, is the clearing them from all superfluous quantities, bringing them to their lowest terms, and separating the known from the unknown, till at length only the unknown quantity is found on one side, and known ones on the other. The reduction of an equation is the last part of the resolution of the problem. See ALGEBRA.

REDUCTION of a figure, design, or draught, is the making a copy thereof, either larger or smaller than the original; still preserving the form and proportion. The great use of the proportional compasses is the reduction of figures, &c. whence they are called *compasses of reduction*. See the article COMPASS.

There are various methods of reducing figures, &c.

Reduction the most easy is by means of the pentagraph, or parallelogram; but this hath its defects. See the article **PENTAGRAPH**.

Redundant The best and most usual methods of reduction are as follow: 1. To reduce a figure, as ABCDE (n^o 1.), into a less compass. About the middle of the figure, as z, pitch on a point, and from this point draw lines to its several angles A, B, C, &c. then drawing the line *ab* parallel to AB, *bc* parallel to BC, &c. you will have the figure *abcde* similar to ABCDE.

Plate
ccccxxv.

If the figure *abcde* had been required to be enlarged, there needed nothing but to produce the lines from the point beyond the angles, as z D, z C, &c. and to draw lines, viz. DC, CB, &c. parallel to the sides *dc*, *cb*, &c.

2. To reduce a figure by the angle of proportion, suppose the figure ABCDE (n^o 2.) required to be diminished in the proportion of the line AB to *ab* (n^o 3.), draw the indefinite line GH (n^o 4.), and from G to H set off the line AB. On G describe the arch HI. Set off the line *ab* as a chord on HI, and draw GI. Then with the angle IGH, you have all the measures of the figure to be drawn. Thus to lay down the point c, take the interval BC, and upon the point G describe the arch KL. Also on the point G describe MN; and upon A, with the distance MN, describe an arch cutting the preceding one in c, which will determine the side *bc*. And after the same manner are the other sides and angles to be described. The same process will also serve to enlarge the figure.

3. To reduce a figure by a scale. Measure all the sides of the figure, as ABCDE (n^o 2.) by a scale, and lay down the same measures respectively from a smaller scale in the proportion required.

4. To reduce a map, design, or figure, by squares. Divide the original into little squares, and divide a fresh paper of the dimensions required into the same number of squares, which are to be larger or less than the former, as the map is to be enlarged or diminished. This done in every square of the second figure, draw what you find in its correspondent one in the first.

REDUCTION, in metallurgy, is the bringing back metalline substances which have been changed into scoriae or ashes, or otherwise divested of their metallic form, into their natural and original state of metals again. See **METALLURGY**, *passim*; and **CHEMISTRY**, n^o 140. and 320.

REDUCTION, in surgery, denotes an operation whereby a dislocated, luxated, or fractured bone, is restored to its former state or place.

REDUNDANCY, a fault in discourse, consisting in the use of a superfluity of words. Words perfectly synonymous are redundant, and ought to be retrenched.

REDUNDANT, in music. What the French call *une accord superflue*, which we have translated a *redundant chord* in the article **MUSIC** (from D'Alembert), has by others been rendered a *chord extremely sharp*, as in the translation of Rameau's Principles of Composition. Their nature will be best understood by a few examples, and an account of the number of tones, semitones, or lesser intervals, contained in each.

The *second redundant* is composed of a major tone, and a minor semitone; as from *fa* to *sol* sharp. Its proportion is as 64 to 75.

The *third redundant* consists of two tones and a semitone, as *fa*, *la*, sharp. Its proportion is as 96 to 125.

The *fourth redundant* is the same with the tritone.

From these examples compared with the same intervals in their natural state, the reader may form a general idea of what is meant by *redundant*.

REE, **REIS**, or *Res*, a little Portuguese coin. See **MONEY-Table**.

REED, in botany. See **ARUNDO** and **BAMBOO**.

There are two sorts of reeds, says Hasselquist, growing near the Nile. One of them has scarce any branches; but is furnished with numerous leaves, which are narrow, smooth, channelled on the upper surface; and the plant is about 11 feet high. The Egyptians make ropes of the leaves. They lay them in water like hemp, and then make them into good strong cables. These, with the bark of the date-tree, form almost the only cable used in the Nile. The other sort is of great consequence. It is a small reed, about two or three feet high, full branched, with short, sharp, lancet-shaped leaves. The roots, which are as thick as the stem, creep and mat themselves together to a considerable distance. This plant seems useless in common life; but to it, continues the learned author, is the very soil of Egypt owing: for the matted roots have stopped the earth which floated in the waters, and thus formed, out of the sea, a country that is habitable.

Fire-REEDS. See **FIRE-Ship**.

REED, a term in the west of England for the straw used by thatchers, which is wheat straw finely combed, consisting of stiff, unbruised, and unbroken stalks of great length, carefully separated from the straw used for fodder by the thresher, and bound in sheaves or nitches, each of which weighs 28 lb. and are sold from 21 s. to 31 s. per hundred nitches, according to the season. This is a great improvement in the art of thatching, as it gives a finish to the work which cannot be attained by straw, rough and tumbled together, without any separation of the long and short: it also is a readier mode of working.

REEF, a term in navigation. When there is a great gale of wind, they commonly roll up part of the sail below, that by this means it may become the narrower, and not draw so much wind; which contracting or taking up the sail they call a *reef*, or *reefing the sail*: so also when a *top-mast* is *sprung*, as they call it, that is, when it is cracked, or almost broken in the cap, they cut off the lower piece that was near broken off, and setting the other part, now much shorter, in the step again, they call it a *reefed top-mast*.

REEL, in the manufactories, a machine serving for the office of reeling. There are various kinds of reels; some very simple, others very complex.

REELING, in the manufactories, the winding of silk, cotton, or the like, into a skain, or upon a button, to prevent its entangling. It is also used for the charging or discharging of bobbins, or quills, to use them in the manufacture of different stuffs, as thread, silk, cotton, &c. Reeling is performed in different ways, and on different engines.

REEVING, in the sea-language, the putting a rope through a block: hence to pull a rope out of a block is called *unreeving*.

RE-EXCHANGE, in commerce, a second payment of the price of exchange, or rather the price of

Rec
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Re-Ex-
change.

Refection
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Refining.

Refining.

a new exchange due upon a bill of exchange that comes to be protested, and to be refunded the bearer by the drawer or indorser.

REFECTION, among ecclesiastics, a spare meal or repast, just sufficing for the support of life: hence the hall in convents, and other communities, where the monks, nuns, &c. take their refectious or meals in common, is called the *refectory*.

REFERENCE, in writing, &c. a mark relative to another similar one in the margin, or at the bottom of the page, where something omitted in the text is added, and which is to be inserted either in reading or copying.

REFINING, in general, is the art of purifying a thing; including not only the assaying or refining of metals, but likewise the depuration or clarification of liquors. See METALLURGY, Part II. CLARIFICATION; and PHARMACY.

Gold and silver may be refined by several methods, which are all founded on the essential properties of these metals, and acquire different names according to their kinds. Thus, for instance, gold having the property which no other metal, not even silver, has of resisting the action of sulphur, of antimony, of nitrous acid, of marine acid, may be purified by these agents from all other metallic substances, and consequently may be refined. These operations are distinguished by proper names, as *purification of gold by antimony, parting, concentrated parting, dry parting* *. In a similar manner, as silver has the property, which the imperfect metals have not, of resisting the action of nitre, it may be refined by this salt: but the term *refining* is chiefly applied to the purification of gold and silver by lead in the cupel.

* See Parting.

This is performed by the destruction, vitrification, and scorification, of all the extraneous and destructible metallic substances with which they are allayed.

As none but the perfect metals can resist the combined action of air and fire, without losing their inflammable principle, and being changed into earthy or vitreous matters, incapable of remaining any longer united with substances in a metallic state, there is then a possibility of purifying gold and silver from all alloy of imperfect metals merely by the action of fire and air; only by keeping them fused till all the alloy be destroyed: but this purification would be very expensive, from the great consumption of fuel, and would be exceedingly tedious. Silver allayed with copper has been exposed longer than 60 hours to a glass-house fire without being perfectly refined: the reason of which is, that when a small quantity only of imperfect metal remains united with gold or silver, it is covered and protected from the action of the air, which is necessary for the combustion of the imperfect metals, as of all combustible matters.

This refining of gold and silver merely by the action of fire, which was the only method anciently known, was very long, difficult, expensive, and imperfect; but a much shorter and more advantageous method has been discovered. This method consists in adding to the allayed gold and silver a certain quantity of lead, and in exposing afterwards this mixture to the action of the fire. Lead is one of the metals which loses most quickly and easily a sufficient quantity of its inflammable principle to cease to be in a metallic state; but, at the

same time, this metal has the remarkable property of retaining, notwithstanding the action of the fire, enough of this same inflammable principle to be very easily melted into a vitrified and powerfully vitrifying matter, called *litharge*.

The lead then which is to be added to the gold and silver to be refined, or which happens naturally to be mixed with these metals, produces in their refining the following advantages: 1. By increasing the proportion of imperfect metals, it prevents them from being so well covered and protected by the perfect metals.— 2. By uniting with these imperfect metals, it communicates to them a property it has of losing very easily a great part of its inflammable principle. 3. By its vitrifying and fusing property which it exercises with all its force upon the calcined and naturally refractory parts of the other metals, it facilitates and accelerates the fusion, the scorification, and the separation of these metals. These are the advantages procured by lead in the refining of gold and silver.

The lead, which in this operation is scorified, and scorifies along with it the imperfect metals, separates from the metallic mass, with which it is then incapable of remaining united. It floats upon the surface of the melted mass; because, by losing part of its phlogiston, it loses also part of its specific gravity, and lastly it vitrifies.

These vitrified and melted matters accumulating more and more upon the surface of the metal while the operation advances, would protect this surface from the contact of air which is so absolutely necessary for the scorification of the rest, and would thus stop the progress of the operation, which could never be finished, if a method had not been contrived for their removal. This removal of the vitrified matter is procured either by the nature of the vessel in which the melted matter is contained, and which being porous, absorbs and imbibes the scorified matter as fast as it is formed, or by a channel cut in the edge of the vessel through which the matter flows out.

The vessel in which the refining is performed is flat and shallow, that the matter which it contains may present to the air the greatest surface possible. This form resembles that of a cup, and hence it has been called *cupel*. The furnace ought to be vaulted, that the heat may be applied upon the surface of the metal during the whole time of the operation. Upon this surface a crust of dark-coloured pellicle is continually forming. In the instant when all the imperfect metal is destroyed, and consequently the scorification ceases, the surface of the perfect metals is seen, and appears clean and brilliant. This forms a kind of fulguration or coruscation. By this mark the metal is known to be refined. If the operation be so conducted that the metal sustains only the precise degree of heat necessary to keep it fused before it be perfectly refined, we may observe that it fixes or becomes solid all at once in the very instant of the coruscation; because a greater heat is required to keep silver or gold in fusion when they are pure than when allayed with lead.

The operation of refining may be performed in small or in large quantities, upon the same principles, but only with some differences in the management. As the refining of small quantities of perfect metals is performed in the same manner as these metals are assayed, the

assay

Reflection essay being only a very accurate refining, we refer to the article *Essay of the Value of Silver*.

Reform.

Large quantities of silver are thus purified, after the operations by which that metal is obtained from its ores. This silver, being always much allayed, is to be mixed with a sufficient quantity of lead to complete its purification, unless lead has been added in its first fusion from the ore, or unless it has been extracted from an ore which also contains lead; in which latter case, it is allayed naturally with a sufficient quantity, or more than sufficient, for the refining of it.

REFLECTION, the return or progressive motion of a moving body, occasioned by some obstacle which hindered it from pursuing its former direction.

Circular Instrument of REFLECTION, an instrument for measuring angles to a very great degree of accuracy. It was invented by the celebrated astronomer Mr Tobias Mayer of Gottingen, principally with a view to do away the errors of the divisions of the limb; and has since been much improved by the Chevalier de Borda, and M. J. H. de Magellan. This instrument is particularly applicable to the measuring of the distances of the heavenly bodies, and was used by the French in their part of the operation for determining the difference of meridians of Paris and Greenwich. For the description, rectification, and use of this instrument, see the article *NAVIGATION*, and *Mackay on the Longitude*, vol. i. p. 44.

REFLECTION of the Rays of Light, in catoptrics, is their return, after approaching so near the surface of bodies as to be thereby repelled or driven backwards. For the causes of reflection, see *OPTICS*, *Index* at *Rays of Light*, and *Reflection of Light*, &c. For the application of the doctrine of reflection to mirrors, see *OPTICS*, p. 347—349. See also *MIRROR*, *BURNING-Glass*, and *Glass-GRINDING*; and for the coating or foliating of mirrors, see the article *FOLIATING of Looking-glasses*, &c. See also *TELESCOPE*.

REFLECTION is also used, figuratively, for an operation of the mind, whereby it turns its view backwards as it were upon itself, and makes itself and its own operations the object of its disquisition; and by contemplating the manner, order, and laws, which it observes in perceiving ideas, comparing them together, reasoning, &c. it frames new ideas of the relations discovered therein. See *METAPHYSICS*.

REFLEX, in painting, means those places in a picture which are supposed to be illuminated by light reflected from some other body in the same piece. See *PAINTING*, Part I. sect. 2. and 5.

REFLUX, the backward course of water, has the same meaning as the ebbing of the sea, and is opposed to flood, flux, or the flowing of the sea. See *TIDES*.

REFORM means a change from worse to better, a re-establishment or revival of former neglected discipline, or a correction of abuses therein. The term is much used in a monastic sense for the reducing an order or congregation of religious to the ancient severity of the rule from which it had gradually swerved, or even for improving on the ancient rule and institution itself, and voluntarily making it more severe. In this sense the order of St Bernard is said to be only a reform of that of St Benedict. In this country it is applied both to politics and religion, and may innocently be applied to any endeavours to change an establishment from worse

to better. But it appears at present to have been chiefly made a pretence for designs which could not fairly or safely be avowed.

A reform in religion and in parliament (see *PARLIAMENT*) has, we know, been most loudly called for by men whose religious notions are immensely different from what has been generally reckoned Christianity, and whose designs, as has been legally proved, went to the overthrow of all civil order. For insidious purposes like these, the word reform is a good cloak, especially if any thing can be fixed upon, either in the religion or government of the state, which, with the help of exaggeration and distortion, can be represented to the weak and unthinking as extremely defective and erroneous.

The general error of these men seems to be, that having picked up a set of speculative notions which flatter their own pride and the pride of those who listen to them, they will allow nothing to the arguments of their opponents or the experience of mankind. They think so often and so much upon their ideal reforms, that while they imagine their notions are liberal and extensive, they become contracted beyond imagination; while their judgments, of course, are warped with the most inveterate prejudices (see *PREJUDICE*.) They see, or think they see, the propriety of their schemes; but they seldom, perhaps never, reflect, that that may be true in speculation or in theory which cannot possibly be reduced to practice. They will not take the world as it is, and allow it to profit by the wisdom and experience of ages; but they will reform it according to those ideas of right which they have learned from their own speculations and airy theories; seldom considering what may be done, they are determined to do what they think ought to be done. Liberty of conscience, and liberty of action, have been claimed by them as the unalienable rights of man; and so we ourselves are disposed to think them: nor have we heard that in this country they have been denied to any man, or set of men, so far as has been thought consistent with the safety of the state, and that of the other individuals who compose it. At the same time, the very same men hesitate not to blame, with acrimony the most violent, and to the utmost of their power to restrain, the actions and opinions of those who with equal conviction, often on better grounds, and generally with more modesty, differ from them.

Amidst that excessive ardour, too, with which they propagate their opinions, they forget the extreme danger of withdrawing the attention of that part of the community, who must earn their bread by the sweat of their brow, from their proper occupations, to the tempestuous sea of political debate, for which their education and mode of life cannot possibly have qualified them. It requires but very little penetration, however, to be able to see, that it can be of no real service either to the individuals themselves, or to the community at large, in whatever light we look upon it. Indeed, to make those the judges of the law, and the reformers of the legislature, who have all their lives been employed in manual labour, is the extreme of folly; and yet it is what some men of considerable abilities, and from whom we had reason to expect better things, have more than once attempted. The effect of such a mode of seduction (and it deserves no better name), when it shall become general, instead of serving the purposes of a real reform, must be to annihilate all civil order.

Dis-
tisfaction

Reform,
Reforma-
tion.

tisfaction is the most powerful check to honest industry; and dissatisfaction and idleness must be the effect of the wanderings of such men in the labyrinths of politics; which, for uncultivated minds especially, paves the way for every species of vice, and gradually ripens them for any wickedness, however atrocious. For the truth of these remarks, we appeal to the history of mankind from the Creation to the present time: and we would seriously request the *sober friends of reform*, and many such, we doubt not, there are, to reflect, that in the present day we have more to fear from licentiousness than from despotism; from reform carried to an extreme than from the pretended attempts either of kings or ministers to annihilate our real liberty (see *REVOLUTION*).

It may also be worth their while to consider, that times of public danger are not generally the best adapted to attempt changes of government; because what might satisfy one party would probably be thought too little by another, and divisions at such a period are most dangerous. When, therefore, attempts are made for reform which appear to be inconsistent with the safety of the state, restrictions must be used, which may by speculative men be thought severe and unnecessary, but of which they themselves are the causes. These restrictions too will be patiently submitted to by the wiser part of the community, when in more peaceable times they would neither have been thought of nor allowed.

Speculative reasoners may speak as much as they will of enlightening the minds of men, and of reforming government by the dictates of a refined and dispassionate philosophy; but when they come to apply their notions to practice, they will either find their representations little better than empty sounds, and therefore ineffectual; or, as is more generally found to be the case, those schemes which in theory appeared to be perfect, will in practice, when combined with the malignant and ambitious passions of men, lead to ruin and disorder. The first institution of government, except among the Jews, was unquestionably the effect of passion and interest combined; and this passion and this interest, restrained within due bounds, is productive of much happiness. That government, we believe, too, will be best supported, and most productive of happiness, in which the mutual passions and interests of the individuals who compose it are so equally poised as to support one another, and to promote each the ends and success of the other: and this by the ablest reasoners and the best men has been thought to be the case with the British constitution. If the modern favourers of reform should think this an unstable support, if they will consider the world as it ever has been, and as it is, they will find it the only one we have, except religion; and they will thence be inclined to make the best of it. If, after all, however, they should be disposed to doubt the position, we have only further to request them, with the sincerity of men and of Christians, to consult their own breasts, and seriously to consider the probable motives of those who act with them. They will then perhaps see, and they surely ought to acknowledge, that few men have acted more according to the impulse of passion, interest, and ambition, than those who have for some time past sounded the tocsin of reform.

REFORMATION, in general, an act of reforming or correcting an error or abuse in religion, disci-

pline, or the like. By way of eminence the word is used for that great alteration and reformation in the corrupted system of Christianity, begun by Luther in the year 1517.

Under the article *HISTORY* (sect. ii.), the various corruptions in religion, the oppressions and usurpations of the clergy, and the extreme insolence of the popes, have been so fully treated of, that any further detail here is unnecessary. It is sufficient to observe, that, before the period of the Reformation, the Pope had in the most audacious manner declared himself the sovereign of the whole world. All the parts of it which were inhabited by those who were not Christians, he accounted to be inhabited by *no-body*; and if Christians took it into their heads to possess any of those countries, he gave them full liberty to make war upon the inhabitants without any provocation, and to treat them with no more humanity than they would have treated wild beasts. The countries, if conquered, were to be parcelled out according to the pope's pleasure; and dreadful was the situation of that prince who refused to obey the will of the holy pontiff, of which many instances will occur to the reader in the various historical articles of this work. In consequence of this extraordinary authority which the pope had assumed, he at last granted to the king of Portugal all the countries to the eastward of Cape Non in Africa, and to the king of Spain all the countries to the westward of it. In this, according to the opinions of some, was completed in his person the character of *Antichrist sitting in the temple of God, and shewing himself as God* *. He had long before, say they, assumed the supremacy belonging to the Deity himself in spiritual matters; and now he assumed the same supremacy in worldly matters also, giving the extreme regions of the earth to whom he pleased. The Reformation, therefore, they consider as the immediate effect of divine power taking vengeance on this and all other deviations from the system of truth; while others consider it merely as an effect of natural causes, and which might have been foreseen and prevented, without abridging the papal power in any considerable degree.

Be this as it will, however, the above-mentioned partition was the last piece of insolence which the pope ever had, or in all probability ever will have, in his power to exercise, in the way of parcelling out the globe to his adherents. Every thing was quiet, every heretic exterminated, and the whole Christian world supinely acquiesced in the enormous absurdities which were inculcated upon them; when, in 1517, the empire of superstition began to decline, and has continued to do so ever since. The person who made the first attack on the extravagant superstitions then prevailing was Martin Luther; the occasion of which is fully related under the article *LUTHER*. By some it is pretended, that the only motive which Luther had in beginning the Reformation was his enmity to the Dominican friars, who had excluded his order (the Augustines) from all share in the gainful traffic of indulgences. But this does not seem at all probable, if we consider that such a motive would not naturally have led him to deny the virtue of indulgences, as such conduct could not but exclude him for ever from any chance of a share in the traffic, which otherwise perhaps he might have obtained. Besides, the extreme contrariety of this traffic to the common principles of reason and honesty was so great, that we

Reforma-
tion.

¹ The pope assumes the disposal of the whole world.

² Theff. ii. 4.

² Reformation begun by Luther.

Reformation.

cannot wonder at finding *one* man in the world who had sense enough to discern it, and virtue enough to oppose such an infamous practice. In all probability, however, the insignificance of the first reformer was the reason why he was not persecuted and exterminated at his first beginning, as others had been before him. Another reason probably might be, that he did not at once attack the whole errors of Popery, but brought about his reformation gradually, probably as it occurred to himself, and as we have related in the account of his life.

¹³
In Switzerland
land by
Zuinglius

The Reformation began in the city of Wittemberg in Saxony, but was not long confined either to that city or province. In 1520 the Franciscan friars, who had the care of promulgating indulgences in Switzerland, were opposed by Zuinglius, a man not inferior in understanding and knowledge to Luther himself. He proceeded with the greatest vigour, even at the very beginning, to overturn the whole fabric of Popery; but his opinions were declared erroneous by the universities of Cologne and Louvain. Notwithstanding this, the magistrates of Zurich approved of his proceedings; and that whole canton, together with those of Bern, Basil, and Chaffausen, embraced his opinions.

In Germany, Luther continued to make great advances, without being in the least intimidated by the ecclesiastical censures which were thundered against him from all quarters, he being continually protected by the German princes either from religious or political motives, so that his adversaries could not accomplish his destruction as they had done that of others. The princes, who were upon bad terms with the court of Rome, took advantage of the success of the new doctrines; and in their own dominions easily overturned a church which had lost all the respect and veneration of the inferior ranks. The court of Rome had disobliged some of the smaller princes in the north of Germany, whom the Pope probably thought too insignificant to be worth the managing, and they universally established the Reformation in their own dominions. Melancthon, Carlostadius, and other men of eminence, also greatly forwarded the work of Luther; and in all probability the Popish hierarchy would have soon come to an end, in the northern parts of Europe at least, had not the emperor Charles V. given a severe check to the progress of reformation in Germany. In order to follow out the schemes dictated by his ambition, he thought it necessary to ingratiate himself with the pope; and the most effectual method of doing this was by destroying Luther. The Pope's legates insisted that Luther ought to be condemned by the diet of Worms without either trial or hearing; as being a most notorious, avowed, and incorrigible heretic. However, this appeared unjust to the members of the diet, and he was summoned to appear; which he accordingly did without hesitation*. There is not the least doubt that his appearance there had been his last in this world, had not the astonishing respect that was paid him, and the crowds who came daily to see him, deterred his judges from delivering the church from the author of such a pestilent heresy; which they were strongly solicited by the pope's party to do. He was therefore permitted to depart with a safe conduct for a certain time; after which he was in the state of a proscribed criminal, to whom it was unlawful to perform any of the offices of humanity.

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Opposed in
Germany
by Char. V.

* See Zuinglius.

During the confinement of Luther in a castle near

Warburg, the Reformation advanced rapidly; almost every city in Saxony embracing the Lutheran opinions. At this time an alteration in the established forms of worship was first ventured upon at Wittemberg, by abolishing the celebration of private masses, and by giving the cup as well as the bread to the laity in the Lord's supper. In a short time, however, the new opinions were condemned by the university of Paris, and a refutation of them was attempted by Henry VIII. of England. But Luther was not to be thus intimidated. He published his animadversions on both with as much acrimony as if he had been refuting the meanest adversary; and a controversy managed by such illustrious antagonists drew a general attention, and the Reformers daily gained new converts both in France and England.

But while the efforts of Luther were thus everywhere crowned with success, the divisions began to prevail which have since so much agitated the reformed church. The first dispute was between Luther and Zuinglius concerning the manner in which the body and blood of Christ were present in the eucharist. Luther and his followers, though they had rejected the notion of transubstantiation, were nevertheless of opinion that the body and blood of Christ were really present in the Lord's supper, in a way which they could not pretend to explain. Carlostadt, who was Luther's colleague, first suggested another view of the subject, which was afterwards confirmed and illustrated by Zuinglius, namely, that the body and blood of Christ were not really present in the eucharist; and that the bread and wine were no more than external symbols to excite the remembrance of Christ's sufferings in the minds of those who received it. Both parties maintained their tenets with the utmost obstinacy; and, by their divisions, first gave their adversaries an argument against them, which to this day the Catholics urge with great force; namely, that the Protestants are so divided, that it is impossible to know who is right or wrong; and that there cannot be a stronger proof than these divisions, that the whole doctrine is false.

To these intestine divisions were added the horrors of a civil war, occasioned by oppression on the one hand, and enthusiasm on the other. In 1525, a great number of seditious fanatics arose on a sudden in different parts of Germany, took arms, united their forces, and made war against the empire, laying waste the country with fire and sword, and committing everywhere the greatest cruelties. The greatest part of this furious mob was composed of peasants and vassals, who groaned under heavy burdens, and declared that they were no longer able to bear the despotic government of their chiefs; and hence this sedition had the name of *the rustic war*, or the *war of the peasants*. At first this rabble declared, that they had no other motives than the redress of their grievances; but no sooner had the enthusiast Munzer, or Munster, the anabaptist, put himself at their head, than the face of things was entirely changed, and the civil commotions in Saxony and Thuringia exceedingly increased, of which an account is given under the article ANABAPTISTS.

In the mean time Frederic, surnamed the *Wise*, elector of Saxony, and Luther's great patron, departed this life, and was succeeded by his brother John. Frederic, though he had protected and encouraged Luther, yet was at no pains to introduce the reformed religion into

Reformation.

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Form of
worship first
altered in
Wittemberg.

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Disputes
among the
Reformers.

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Disturbances
in Germany.

Reforma-
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tion esta-
blished in
Saxony.9
Resolutions
at the diet
of Spire fa-
vourable to
the Refor-
mation.

his dominions. But with his successor it was otherwise; for he, convinced that Luther's doctrine must soon be totally destroyed and suppressed unless it received a speedy and effectual support, ordered Luther and Melancthon to draw up a body of laws relating to the form of ecclesiastical government, the method of public worship, &c. which was to be proclaimed by heralds throughout his dominions. This example was followed by all the princes and states of Germany who renounced the papal supremacy; and a like form of worship, discipline, and government, was thus introduced into all the churches which dissented from that of Rome. This open renunciation of the Romish jurisdiction soon changed the face of affairs; and the patrons of Popery soon intimated, in a manner not at all ambiguous, that they intended to make war on the Lutheran party; which would certainly have been put in execution, had not the troubles that took place in Europe disconcerted their measures. On the other hand, the Lutherans, apprized of these hostile intentions, began also to deliberate on a proper plan of defence against that superstitious violence with which they were in danger of being assailed. The diet of the empire assembled at Spire, in the year 1526; where the emperor's ambassadors were desired to use their utmost endeavours to suppress all disputes about religion, and to insist upon the rigorous execution of the sentence which had been pronounced against Luther and his followers at Worms. The greatest part of the German princes opposed this motion with the utmost resolution, declaring that they could not execute that sentence, nor come to any determination with regard to the doctrines by which it had been occasioned, before the whole matter was submitted to the decision of a council lawfully assembled; alleging farther, that the decision of controversies of this nature belonged properly to it, and to it alone. This opinion, after long and very warm debates, was adopted by a great majority, and at length consented to by the whole assembly: for it was unanimously agreed to present a solemn address to the emperor, intreating him to assemble, without delay, a free and general council; while in the mean time it was also agreed, that the princes of the empire should, in their respective dominions, be at liberty to manage ecclesiastical affairs in the manner they should think most proper; yet so as to be able to give to God and the emperor a proper account of their administration when it should be required of them.

These resolutions proved extremely favourable to the cause of reformation; neither had the emperor any leisure for some time to give disturbance to the reformed. The war, which at this time ensued between him and the pope, gave the greatest advantage to the friends of the reformed, and considerably augmented their number. Several princes, whom the fear of persecution and punishment had hitherto prevented from lending their assistance, publicly renounced the Romish superstition, and introduced among their subjects the same forms of religious worship, and the same system of doctrine, that had been received in Saxony. Others, though placed in such circumstances as discouraged them from acting in an open manner against the interests of the Roman pontiff, were, however, far from discovering the smallest opposition to those who withdrew the people from his despotic yoke; nor did they molest the private assemblies of those who had separated themselves from the

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church of Rome. And in general, all the Germans who, before these resolutions of the diet of Spire, had rejected the papal discipline and doctrine, were now, in consequence of the liberty they enjoyed, wholly employed in bringing their schemes and plans to a certain degree of consistence, and in adding vigour and firmness to the cause in which they were engaged. But this tranquillity and liberty was of no long duration. In 1529, a new diet was assembled at the same place by the emperor, after he had quieted the troubles in various parts of his dominions, and concluded a peace with the pope. The power which had been granted to princes of managing ecclesiastical affairs till the meeting of a general council, was now revoked by a majority of votes; and every change declared unlawful that should be introduced into the doctrine, discipline, or worship of the established religion, before the determination of the approaching council was known. This decree was considered as iniquitous and intolerable by the elector of Saxony, the landgrave of Hesse, and other members of the diet, who were persuaded of the necessity of a reformation. The promise of speedily assembling a general council, they looked upon to be an artifice of the church of Rome; well knowing, that a free and lawful council would be the last thing to which the pope would consent. When, therefore, they found that all their arguments and remonstrances made no impression upon Ferdinand the emperor's brother, who presided in the diet, Charles himself being then at Barcelona, they entered a solemn protest against this decree on the 19th of April, and appealed to the emperor and a future council. Hence arose the denomination of *Protestants*, which from this period has been given to those who separate from the communion of the church of Rome. The princes of the empire who entered this protest were, John elector of Saxony; George elector of Brandenburg; Ernest and Francis dukes of Lunenburg; the landgrave of Hesse; and the prince of Anhalt. These were seconded by 13 imperial towns, viz. Strasburg, Ulm, Nuremberg, Constance, Rottingen, Windseim, Memmingen, Nortlingen, Lindaw, Kempton, Heilbron, Wisseburg, and St Gall.

The dissenting princes, who were the protectors and heads of the reformed churches, had no sooner entered their protest, than they sent proper persons to the emperor, who was then upon his passage from Spain to Italy, to acquaint him with their proceedings in this matter. The ministers employed in this commission executed it with the greatest intrepidity and presence of mind; but the emperor, exasperated at the audacity of those who presumed to differ from him, caused the ambassadors to be arrested. The news of this violent step made the Protestant princes conclude, that their personal safety, and the success of their cause, depended entirely upon their own courage and union. They determined, therefore, to enter into a solemn confederacy: for which purpose they held several meetings at Rot, Nuremberg, Smalcald, and other places: but so different were their opinions and views, that they could determine upon nothing.

One great obstacle to the intended confederacy was the dispute which had arisen between Luther and Zuinglius concerning the real presence of Christ in the Lord's Supper. To terminate this dispute, if possible, Philip, landgrave of Hesse, invited, in the year 1529, to

Reforma-
tion.10
Revoked by
the empe-
ror.11
Origin of
the name
Protestants.

12

Conference
between
Luther and
Zuinglius.

F

a

Reforma-
tion.

a conference at Marburg, Luther and Zuinglius, together with several other of the more eminent doctors who adhered to the respective parties of these contending chiefs; but this measure was not attended with the salutary effects which were expected from it. The divines disputed for four days in presence of the landgrave. Luther attacked Oecolampadius, and Zuinglius was attacked by Melancthon. Zuinglius was accused of heresy, not only on account of his explanation of the nature and design of the Lord's Supper, but also in consequence of the false notions he was supposed to have adopted concerning the divinity of Christ, the efficacy of the divine word, original sin, and some other parts of the Christian doctrine. This illustrious reformer, however, cleared himself from the greatest part of these charges with the most triumphant evidence, and in such a manner as appeared satisfactory even to Luther himself: but their dissension concerning the manner of Christ's presence in the eucharist still remained; nor could either of the contending parties be persuaded to abandon, or even to modify, their opinions on that matter. The only advantage, therefore, which resulted from the meeting was, that the jarring doctors formed a kind of truce, by agreeing to a mutual toleration of their sentiments, and leaving to the disposal of Providence the cure of their divisions.

In the mean time news were received that the emperor designed to come into Germany, with a view to terminate all religious differences at the approaching diet of Augsburg. Having foreseen some of the consequences of those disputes, and, besides, taken the advice of men of wisdom, sagacity, and experience, he became at certain times more cool in his proceedings, and more impartial in his opinions both of the contending parties and the merits of the cause. He, therefore, in an interview with the pope at Bologna, insisted, in the most serious and urgent manner, on the necessity of a general council. His remonstrances and expostulations, however, could not move the pontiff; who maintained with zeal the papal prerogatives, reproached the emperor with an ill-judged clemency, and alleged that it was the duty of that prince to support the church, and to execute speedy vengeance upon that obstinate heretical faction who dared to call in question the authority of Rome and its pontiff. To this discourse the emperor paid no regard; looking upon it as a most iniquitous thing, and a measure directly opposite to the laws of the empire, to condemn unheard a set of men who had always approved themselves good citizens, and deserved well of their country in several respects. Hitherto indeed it was not easy for the emperor to form a clear idea of the matters in debate, since there was no regular system as yet composed, by which it might be known with certainty what were the true causes of Luther's opposition to the pope. The elector of Saxony, therefore, ordered Luther, and other eminent divines, to commit to writing the chief articles of their religious system, and the principal points in which they differed from the church of Rome. Luther, in compliance with this order, delivered to the elector at Torgaw 17 articles which had been agreed upon in a conference at Sultzbach in 1529; from whence these received the name of *the articles of Torgaw*. But though these were deemed by Luther a sufficient declaration of the sentiments of the reformers, yet it was judged proper to en-

large them, in order to give perspicuity to their arguments, and strength to their cause. In this work Melancthon was employed; in which he showed a proper deference to the counsels of Luther, and expressed his sentiments and doctrine with the greatest elegance and perspicuity; and thus came forth to view the famous *Confession of Augsburg*.

On the 15th of June 1530, Charles arrived at Augsburg, and the diet was opened five days after. The Protestants received a formal permission to present an account of their tenets to the diet on the 25th of the same month; in consequence of which, at the time appointed, Christian Bayer, chancellor of Saxony, read, in the German language, before the emperor and the princes assembled, the confession of Augsburg above-mentioned. It contained 28 chapters, of which 21 were employed in representing the religious opinions of the Protestants, and the other seven in pointing out the errors and superstitions of the church of Rome. The princes heard it with the deepest attention and recollection of mind: it confirmed some in the principles they had embraced; surprised others; and many, who before this time had little or no idea of the religious sentiments of Luther, were now not only convinced of their innocence, but delighted with their purity and simplicity. The copies of this Confession, which after being read were delivered to the emperor, were signed by John elector of Saxony, George marquis of Brandenburg, Ernest duke of Lunenburg, Philip landgrave of Hesse, Wolfgang prince of Anhalt, and by the imperial cities of Nuremberg and Reutlingen.

The creatures of the church of Rome who were present at this diet employed John Faber, afterwards bishop of Vienna, together with Eckius, and another doctor named *Cocklaus*, to draw up a refutation of the Protestant confession: which refutation having been publicly read, the emperor required the Protestant members to acquiesce in it, and put an end to the religious disputes by an unlimited submission to the opinions and doctrines contained in this answer. But this demand was far from being complied with. The Protestants declared on the contrary, that they were by no means satisfied with the reply of their adversaries; and earnestly desired a copy of it, that they might more fully demonstrate its extreme insufficiency and weakness. But this reasonable request was refused by the emperor; who interposed his supreme authority to prevent any farther proceedings in this matter, and solemnly prohibited the publication of any new writings or declarations that might contribute to lengthen out these religious debates. This, however, did not reduce the Protestants to silence. The divines of that communion, who had been present at the diet, endeavoured to recollect the arguments and objections employed by Faber, and had again recourse to the pen of Melancthon, who refuted them in an ample and satisfactory manner in a piece which was presented to the emperor on the 22d of September, but which Charles refused to receive. This answer was afterwards enlarged by Melancthon, when he had obtained a copy of Faber's reply; and was published in the year 1531, with the other pieces that related to the doctrine and discipline of the Lutheran church, under the title of *A Defence of the Confession of Augsburg*.

Matters now began to draw towards a crisis. There were only three ways of bringing to a conclusion these religious

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tion.14
It is pre-
sented to
the empe-
ror.15
A refuta-
tion of it,
in which
the Prote-
stants are
ordered to
acquiesce.13
Origin of
the confes-
sion of
Augsburg.

Reforma-
tion.

religious differences. 1. To grant the Protestants a toleration and privilege of serving God as they thought proper: 2. To compel them to return to the church of Rome by the violent methods of persecution: or, 3. That a reconciliation should be made, upon fair, candid, and equitable terms, by engaging each of the parties to temper their zeal with moderation, to abate reciprocally the rigour of their pretensions, and remit something of their respective claims. The third expedient was most generally approved of, being peculiarly agreeable to all who had at heart the welfare of the empire; nor did the pope seem to look upon it either with aversion or contempt. Various conferences therefore were held between persons eminent for piety and learning on both sides; and nothing was omitted that might have the least tendency to calm the animosities and heal the divisions which reigned between the contending parties. But the differences were too great to admit of a reconciliation; and therefore the votaries of Rome had recourse to the powerful arguments of imperial edicts, and the force of the secular arm. On the 16th of November, a severe decree was issued out by the express order of the emperor (during the absence of the Hessian and Saxon princes, who were the chief supporters of the Protestant cause), in which every thing was manifestly adapted to deject the friends of religious liberty, excepting only a faint and dubious promise of engaging the pope to assemble a general council about six months after the separation of the diet. In this decree the dignity and excellence of the Popish religion were extolled beyond measure, a new degree of severity and force was added to that which had been published at Worms against Luther and his adherents, the changes which had been introduced into the doctrine and discipline of the Protestant churches were severely censured, and a solemn order was addressed to the princes, cities, and states, who had thrown off the Papal yoke, to return to their allegiance to Rome, on pain of incurring the indignation and vengeance of the emperor as the patron and protector of the church. Of this formidable decree the elector of Saxony and confederated princes were no sooner informed, than they assembled in order to deliberate on the measures proper to be taken in such a crisis. In the years 1530 and 1531 they met, first at Smalcald, and afterwards at Francfort, where they formed a solemn alliance and confederacy, with the intention of defending vigorously their religion and liberties against the dangers and encroachments with which they were threatened by the edict of Augsburg, without attempting, however, any thing offensive against the votaries of Rome; and into this confederacy they invited the kings of England, France, Denmark, &c. leaving no means unemployed that might corroborate and cement this important alliance.

This confederacy was at first opposed by Luther, from an apprehension of the calamities and troubles which it might produce; but at last, perceiving the necessity of it, he consented; though he uncharitably, as well as imprudently, refused to comprehend in it the followers of Zuinglius among the Swiss, together with the German states and cities who had adopted the sentiments and confession of Bucer. In the invitation addressed to Henry VIII. of England, whom the confederate princes were willing to declare the head and protector of their league, the following things, among

others, were expressly stipulated: That the king should encourage, promote, and maintain, the true doctrine of Christ as it was contained in the confession of Augsburg, and defend the same at the next general council: that he should not agree to any council summoned by the bishop of Rome, but protest against it; and neither submit to its decrees, nor suffer them to be respected in his dominions: that he should never allow the Roman pontiff to have any pre-eminence or jurisdiction in his dominions; that he should advance 100,000 crowns for the use of the confederacy, and double that sum if it became necessary: all which articles the confederate princes were equally obliged to observe on their part. To these demands the king replied, that he would maintain and promote the true doctrine of Christ; but, at the same time, as the true ground of that doctrine lay only in the holy Scriptures, he would not accept at any one's hand what should be his own faith, or that of his kingdom; and therefore desired that they would send over two learned men to confer with him, in order to promote a religious union between him and the confederates. However, he declared himself of their opinion with regard to the meeting of a free general council, and promised to join with them in all such councils for the defence of the true doctrine; but thought the regulation of the ceremonial part of religion, being a matter of indifference, ought to be left to the choice of each sovereign for his own dominions. After this the king gave them a second answer more full and satisfactory; but after the execution of queen Anne, this negociation came to nothing. On the one hand, the king grew cold when he perceived that the confederates were no longer of use to him in supporting the validity of his marriage; and, on the other hand, the German princes became sensible that they could never succeed with Henry unless they allowed him an absolute dictatorship in matters of religion.

While every thing thus tended to an open war between the two opposite parties, the elector Palatine, and the elector of Mentz, offered their mediation, and endeavoured to procure a reconciliation. The emperor himself, for various reasons, was at this time inclined to peace: for, on the one hand, he stood in need of succours against the Turks, which the Protestant princes refused to grant as long as the edicts of Worms and Augsburg remained in force; and, on the other, the election of his brother Ferdinand to the dignity of king of the Romans, which had been carried by a majority of votes at the diet of Cologne in 1531, was by the same princes contested, as being contrary to the fundamental laws of the empire. In consequence of all this, after many negotiations and projects of reconciliation, a treaty of peace was concluded at Nuremberg in 1532, between the emperor and the Protestant princes, on the following conditions; viz. That the latter should furnish a subsidy for carrying on the war against the Turks, and acknowledge Ferdinand lawful king of the Romans; and that the emperor on his part should abrogate and annul the edicts of Worms and Augsburg, and allow the Lutherans the free and undisturbed exercise of their religious doctrine and discipline, until a rule of faith was fixed either in the free general council that was to be assembled in the space of six months, or in a diet of the empire.

Soon after the conclusion of the peace at Nuremberg

Reforma-
tion.

19
Peace of
Nuremberg
concluded.

17
The league
of Smal-
cald.

18
Invitation
to Hen-
ry VIII. of
England.

Reformation.

died John elector of Saxony, who was succeeded by his son John Frederic, a prince of invincible fortitude and magnanimity, but whose reign was little better than one continued train of disappointments and calamities. The religious truce, however, gave new vigour to the reformation. Those who had hitherto been only secret enemies to the Roman pontiff, now publicly threw off his yoke; and various cities and provinces of Germany enlisted themselves under the religious standards of Luther. On the other hand, as the emperor had now no other hope of terminating the religious disputes but by the meeting of a general council, he repeated his requests to the pope for that purpose. The pontiff (Clement VII.), whom the history of past councils filled with the greatest uneasiness, endeavoured to retard what he could not with decency refuse. At last, in 1533, he made a proposal by his legate to assemble a council at Mantua, Placentia, or Bologna; but the Protestants refused their consent to the nomination of an Italian council, and insisted that a controversy which had its rise in the heart of Germany, should be determined within the limits of the empire. The pope, by his usual artifices, eluded the performance of his own promise; and, in 1534, was cut off by death, in the midst of his stratagems. His successor Paul III. seemed to show less reluctance to the assembling a general council, and in the year 1535 expressed his inclination to convoke one at Mantua; and, the year following, actually sent circular letters for that purpose through all the states and kingdoms under his jurisdiction. This council was summoned by a bull issued out on the 2d of June 1536, to meet at Mantua the following year: but several obstacles prevented its meeting; one of the most material of which was, that Frederic duke of Mantua had no inclination to receive at once so many guests, some of them very turbulent, into the place of his residence. On the other hand, the Protestants were firmly persuaded that, as the council was assembled in Italy, and by the authority of the pope alone, the latter must have had an undue influence in that assembly; of consequence, that all things must have been carried by the votaries of Rome. For this reason they assembled at Smalcald in the year 1537, where they solemnly protested against this partial and corrupt council, and, at the same time, had a new summary of their doctrine drawn up by Luther, in order to present it to the assembled bishops if it should be required of them. This summary, which had the title of *The Articles of Smalcald*, is commonly joined with the creeds and confessions of the Lutheran church.

21
Protestation against it.

22
Fruitless schemes of accommodation.

After the meeting of the general council in Mantua was thus prevented, many schemes of accommodation were proposed both by the emperor and the Protestants; but, by the artifices of the church of Rome, all of them came to nothing. In 1541, the emperor appointed a conference at Worms on the subject of religion, between persons of piety and learning chosen from the contending parties. This conference, however, was, for certain reasons, removed to the diet which was to be held at Ratisbon that same year, and in which the principal subject of deliberation was a memorial presented by a person unknown, containing a project of peace. But the conference produced no other effect than a mutual agreement of the contending parties to refer their matters to a general council, or, if

the meeting of such a council should be prevented, to the next German diet.

Reformation.

This resolution was rendered ineffectual by a variety of incidents, which widened the breach, and put off to a farther day the deliberations which were designed to heal it. The pope ordered his legate to declare to the diet of Spire, assembled in 1542, that he would, according to the promise he had already made, assemble a general council, and that Trent should be the place of its meeting, if the diet had no objection to that city. Ferdinand, and the princes who adhered to the cause of the pope, gave their consent to this proposal; but it was vehemently objected to by the Protestants, both because the council was summoned by the authority of the pope only, and also because the place was within the jurisdiction of the Pope; whereas they desired a free council, which should not be biassed by the dictates, nor awed by the proximity, of the pontiff. But this protestation produced no effect. Paul III. persisted in his purpose, and issued out his circular letters for the convocation of the council, with the approbation of the emperor. In justice to this pontiff, however, it must be observed, that he showed himself not to be averse to every reformation. He appointed four cardinals, and three other persons eminent for their learning, to draw up a plan for the reformation of the church in general, and of the church of Rome in particular. The reformation proposed in this plan was indeed extremely superficial and partial, yet it contained some particulars which could scarcely have been expected from those who composed it. They complained of the pride and ignorance of the bishops, and proposed that none should receive orders but learned and pious men; and that therefore care should be taken to have proper masters for the instruction of youth. They condemned translations from one benefice to another, grants of reservation, non-residence, and pluralities. They proposed that some convents should be abolished; that the liberty of the press should be restrained and limited; that the colloquies of Erasmus should be suppressed; that no ecclesiastic should enjoy a benefice out of his own country; that no cardinal should have a bishopric; that the questors of St Anthony and several other saints should be abolished; and, which was the best of all their proposals, that the effects and personal estates of ecclesiastics should be given to the poor. They concluded with complaining of the prodigious number of indigent and ragged priests who frequented St Peter's church; and declared, that it was a great scandal to see the whores lodged so magnificently at Rome, and riding through the streets on fine mules, while the cardinals and other ecclesiastics accompanied them in the most courteous manner.— This plan of reformation was turned into ridicule by Luther and Sturmius; and indeed it left unredressed the most intolerable grievances of which the Protestants complained.

23
Council of Trent proposed.

24
Plan of reformation proposed by the pope.

All this time the emperor had been labouring to persuade the Protestants to consent to the meeting of the council at Trent; but when he found them fixed in their opposition to this measure, he began to listen to the sanguinary measures of the pope, and resolved to terminate the disputes by force of arms. The elector of Saxony and landgrave of Hesse, who were the chief supporters of the Protestant cause, upon this took proper

25
War between the emperor and the Protestants.

Reforma-
tion.

proper measures to prevent their being surprised and overwhelmed by a superior force; but, before the horrors of war commenced, the great reformer Luther died in peace at Ayselben, the place of his nativity, in 1546.

The emperor and the pope had mutually resolved on the destruction of all who should dare to oppose the council of Trent. The meeting of it was to serve as a signal for taking up arms; and accordingly its deliberations were scarcely begun in 1546, when the Protestants perceived undoubted signs of the approaching storm, and a formidable union betwixt the emperor and pope, which threatened to crush and overwhelm them at once. This year indeed there had been a new conference at Ratisbon upon the old subject of accommodating differences in religion; but from the manner in which the debates were carried on, it plainly appeared that these differences could only be decided in the field of battle. The council of Trent, in the mean time, promulgated their decrees; while the reformed princes, in the diet of Ratisbon, protested against their authority, and were on that account proscribed by the emperor, who raised an army to reduce them to obedience. See *Father Paul's History of the Council of Trent*, and our articles PAUL (Father), and TRENT.

25
Elector of
Saxony de-
feated and
taken pri-
soner.

The elector of Saxony and the landgrave of Hesse led their forces into Bavaria against the emperor, and cannonaded his camp at Ingoldstadt. It was supposed that this would bring on an engagement, which would probably have been advantageous to the cause of the reformed; but this was prevented, chiefly by the perfidy of Maurice duke of Saxony, who invaded the dominions of his uncle. Divisions were also fomented among the confederate princes, by the dissimulation of the emperor; and France failed in paying the subsidy which had been promised by its monarch: all which so discouraged the heads of the Protestant party, that their army soon dispersed, and the elector of Saxony was obliged to direct his march homewards. But he was pursued by the emperor, who made several forced marches, with a view to destroy his enemy before he should have time to recover his vigour. The two armies met near Muhlberg, on the Elbe, on the 24th of April 1547; and, after a bloody action, the elector was entirely defeated, and himself taken prisoner.—Maurice, who had so basely betrayed him, was now declared elector of Saxony; and by his intreaties Philip landgrave of Hesse, the other chief of the Protestants, was persuaded to throw himself on the mercy of the emperor, and to implore his pardon. To this he consented, relying on the promise of Charles for obtaining forgiveness, and being restored to liberty; but, notwithstanding these expectations, he was unjustly detained prisoner, by a scandalous violation of the most solemn convention. It is said that the emperor retracted his promise, and deluded this unhappy prince by the ambiguity of two German words. History indeed can scarce afford a parallel to the perfidious, mean-spirited, and despotic behaviour of the emperor in the present case. After having received in public the humble submission of the prince on his knees, and after having set him at liberty by a solemn treaty, he had him arrested anew without any reason, nay, without any pretence, and kept him close prisoner for several years. When Maurice remonstrated against this new confinement, the emperor answered,

that he had never promised that the landgrave should not be imprisoned anew, but only that he should be exempted from perpetual imprisonment; and, to support this assertion, he produced the treaty, in which his ministers had perfidiously foisted *ewiger gefangnis*, which signifies a "perpetual prison," instead of *einiger gefangnis*, which signifies "any prison." This, however, is contested by some historians.

Reforma-
tion.

The affairs of the Protestants now seemed to be desperate. In the diet of Augsburg, which was soon after called, the emperor required the Protestants to leave the decision of these religious disputes to the wisdom of the council which was to meet at Trent. The greatest part of the members consented to this proposal, being convinced by the powerful argument of an imperial army, which was at hand to dispel the darkness from the eyes of such as might otherwise have been blind to the force of Charles's reasoning. However, this general submission did not produce the effect which was expected from it. A plague which broke out, or was said to do so, in the city, caused the greatest part of the bishops to retire to Bologna; by which means the council was in effect dissolved, nor could all the intreaties and remonstrances of the emperor prevail upon the pope to re-assemble it without delay. During this interval, therefore, the emperor judged it necessary to fall upon some method of accommodating the religious differences, and maintaining peace until the council so long expected should be finally obtained. With this view he ordered Julius Pelugius bishop of Naumberg, Michael Sidonius, a creature of the pope, and John Agricola, a native of Ayselben, to draw up a formulary which might serve as a rule of faith and worship, till the council should be assembled: but as this was only a temporary expedient, and had not the force of a permanent or perpetual institution, it thence obtained the name of the *Interim*.

27
The coun-
cil sudden-
ly dissol-
ved.

28
A formula-
ary drawn
up by the
emperor.

This project of Charles was formed partly with a design to vent his resentment against the pope, and partly to answer other political purposes. It contained all the essential doctrines of the church of Rome, though considerably softened by the artful terms which were employed, and which were quite different from those employed before and after this period by the council of Trent. There was even an affected ambiguity in many of the expressions, which made them susceptible of different senses, and applicable to the sentiments of both communions. The consequence of all this was, that the imperial creed was reprobated by both parties. However, it was promulgated with great solemnity by the emperor at Augsburg. The elector of Mentz, without even asking the opinion of the princes present, gave a sanction to this formula, as if he had been commissioned to represent the whole diet. Many kept silence through fear, and that silence was interpreted as a tacit consent. Some had the courage to oppose it, and these were reduced by force of arms; and the most deplorable scenes of bloodshed and violence were acted throughout the whole empire. Maurice, elector of Saxony, who had hitherto kept neutral, now assembled the whole of his nobility and clergy, in order to deliberate on this critical affair. At the head of the latter was Melancthon, whose word was respected as a law among the Protestants. But this

29
Displeases
both par-
ties.

Reforma-
tion.

30
Scheme of
reconcilia-
tion by
Melane-
thon.

31
A new
council pro-
posed at
Trent.

33
The emper-
or is fur-
prised, and
forced to a
peace by
the elector
of Saxony.

this man had not the courage of Luther; and was therefore on all occasions ready to make concessions, and to propose schemes of accommodation. In the present case, therefore, he gave it as his opinion, that the whole of the book called *Interim* could not by any means be adopted by the Protestants; but at same time he declared, that he saw no reason why this book might not be approved, adopted, and received, as an authoritative rule in things that did not relate to the essential parts of religion, and which he accounted indifferent. But this scheme, instead of cementing the differences, made them much worse than ever; and produced a division among the Protestants themselves, which might have overthrown the Reformation entirely, if the emperor and pope had seized the opportunity.

In the year 1549, the pope (Paul III.) died; and was succeeded by Julius III. who, at the repeated solicitations of the emperor, consented to the re-assembling of a council at Trent. A diet was again held at Augsburg under the cannon of an imperial army, and Charles laid the matter before the princes of the empire. Most of these present gave their consent to it, and among the rest Maurice elector of Saxony; who consented on the following conditions: 1. That the points of doctrine which had already been decided there, should be re-examined. 2. That this examination should be made in presence of the Protestant divines. 3. That the Saxon Protestants should have a liberty of voting as well as of deliberating in the council. 4. That the pope should not pretend to preside in that assembly, either in person or by his legates. This declaration of Maurice was read in the diet, and his deputies insisted upon its being entered into the registers which the archbishop of Mentz obstinately refused. The diet was concluded in the year 1551; and, at its breaking up, the emperor desired the assembled princes and states to prepare all things for the approaching council, and promised to use his utmost endeavours to procure moderation and harmony, impartiality and charity, in the transactions of that assembly.

On the breaking up of the diet, the Protestants took such steps as they thought most proper for their own safety. The Saxons employed Melancthon, and the Wurtembergers Brengius, to draw up Confessions of Faith to be laid before the new council. The Saxon divines, however, proceeded no farther than Nuremberg, having received secret orders from Maurice to stop there: For the elector, perceiving that Charles had formed designs against the liberties of the German princes, resolved to take the most effectual measures for crushing his ambition at once. He therefore entered with the utmost secrecy and expedition into an alliance with the king of France, and several of the German princes, for the security of the rights and liberties of the empire; after which, assembling a powerful army in 1552, he marched against the emperor, who lay with a handful of troops at Inspruck, and expected no such thing. By this sudden and unforeseen accident Charles was so much dispirited, that he was willing to make peace almost on any terms. The consequence of this was, that he concluded a treaty at Passau, which by the Protestants is considered as the basis of their religious liberty. By the first three articles of this treaty it

was agreed, that Maurice and the confederates should lay down their arms, and lend their troops to Ferdinand to assist him against the Turks; and that the landgrave of Hesse should be set at liberty. By the fourth it was agreed, that the Rule of Faith called the *Interim* should be considered as null and void: that the contending parties should enjoy the free and undisturbed exercise of their religion, until a diet should be assembled to determine amicably the present disputes (which diet was to meet in the space of six months); and that this religious liberty should continue always, in case it should be found impossible to come to an uniformity in doctrine and worship. It was also determined, that all those who had suffered banishment, or any other calamity, on account of their having been concerned in the league or war of Smalcald, should be reinstated in their privileges, possessions, and employments; that the imperial chamber at Spire should be open to the Protestants as well as to the Catholics; and that there should always be a certain number of Lutherans in that high court.—To this peace Albert, marquis of Brandenburg, refused to subscribe; and continued the war against the Roman-catholics, committing such ravages in the empire, that a confederacy was at last formed against him. At the head of this confederacy was Maurice elector of Saxony, who died of a wound he received in a battle fought on the occasion in 1553.

The assembling of the diet promised by Charles was prevented by various incidents; however it met at Augsburg in 1555, where it was opened by Ferdinand in name of the emperor, and terminated those deplorable calamities which had so long desolated the empire. After various debates, the following acts were passed, on the 25th of September: That the Protestants who followed the Confession of Augsburg should be for the future considered as entirely free from the jurisdiction of the Roman pontiff, and from the authority and superintendence of the bishops; that they were left at perfect liberty to enact laws for themselves relating to their religious sentiments, discipline, and worship; that all the inhabitants of the German empire should be allowed to judge for themselves in religious matters, and to join themselves to that church whose doctrine and worship they thought the most pure and consonant to the spirit of true Christianity; and that all those who should injure or persecute any person under religious pretences, and on account of their opinions, should be declared and proceeded against as public enemies of the empire, invaders of its liberty, and disturbers of its peace.

Thus was the Reformation established in many parts of the German empire, where it continues to this day; nor have the efforts of the Popish powers at any time been able to suppress it, or even to prevent it from gaining ground. It was not, however, in Germany alone that a reformation of religion took place. Almost all the kingdoms of Europe began to open their eyes to the truth about the same time. The reformed religion was propagated in Sweden, soon after Luther's rupture with the church of Rome, by one of his disciples named *Olaus Petri*. The zealous efforts of this missionary were seconded by Gustavus Vasa, whom the Swedes had raised to the throne in place of Christiern king of Denmark, whose horrid barbarity lost him the crown. This prince, however, was as prudent

Reforma-
tion.

33
Treaty of
Augsburg.

34
Account of
the Reforma-
tion in
Sweden.

Reformation. prudent as he was zealous; and, as the minds of the Swedes were in a fluctuating state, he wisely avoided all kind of vehemence and precipitation in spreading the new doctrine. Accordingly, the first object of his attention was the instruction of his people in the sacred doctrines of the Holy Scriptures; for which purpose he invited into his dominions several learned Germans, and spread abroad through the kingdom the Swedish translation of the Bible that had been made by Olaus Petri. Some time after this, in 1526, he appointed a conference at Upsal, between this reformer and Peter Gallius, a zealous defender of the ancient superstition, in which each of the champions was to bring forth his arguments, that it might be seen on which side the truth lay. In this dispute Olaus obtained a signal victory; which contributed much to confirm Gustavus in his persuasion of the truth of Luther's doctrine, and to promote its progress in Sweden. The following year another event gave the finishing stroke to its propagation and success. This was the assembly of the states at Westeraas, where Gustavus recommended the doctrine of the reformers with such zeal, that, after warm debates fomented by the clergy in general, it was unanimously resolved that the reformation introduced by Luther should have place in Sweden. This resolution was principally owing to the firmness and magnanimity of Gustavus, who declared publicly, that he would lay down the sceptre and retire from the kingdom, rather than rule a people enslaved by the orders and authority of the pope, and more controuled by the tyranny of their bishops than by the laws of their monarch. From this time the papal empire in Sweden was entirely overthrown, and Gustavus declared head of the church.

35
In Denmark.

In Denmark, the reformation was introduced as early as the year 1521, in consequence of the ardent desire discovered by Christiern II. of having his subjects instructed in the doctrines of Luther. This monarch, notwithstanding his cruelty, for which his name has been rendered odious, was nevertheless desirous of delivering his dominions from the tyranny of the church of Rome. For this purpose, in the year 1520, he sent for Martin Reinard, one of the disciples of Carlostadt, out of Saxony, and appointed him professor of divinity at Hafnia; and after his death, which happened in 1521, he invited Carlostadt himself to fill that important place. Carlostadt accepted of this office indeed, but in a short time returned to Germany; upon which Christiern used his utmost endeavours to engage Luther to visit his dominions, but in vain. However, the progress of Christiern, in reforming the religion of his subjects, or rather of advancing his own power above that of the church, was checked, in the year 1523, by a conspiracy, by which he was deposed and banished; his uncle Frederic, duke of Holstein and Sleswic, being appointed his successor.

Frederic conducted the reformation with much greater prudence than his predecessor. He permitted the Protestant doctors to preach publicly the sentiments of Luther, but did not venture to change the established government and discipline of the church. However, he contributed greatly to the progress of the reformation, by his successful attempts in favour of religious liberty in an assembly of the states held at Odensee in 1527. Here he procured the publication of a famous

edict, by which every subject of Denmark was declared free either to adhere to the tenets of the church of Rome, or to the doctrine of Luther. The papal tyranny was totally destroyed by his successor Christiern III. He began by suppressing the despotic authority of the bishops, and restoring to their lawful owners a great part of the wealth and possessions which the church had acquired by various stratagems. This was followed by a plan of religious doctrine, worship, and discipline, laid down by Bugenhagius, whom the king had sent for from Wittemberg for that purpose; and in 1539 an assembly of the states at Odensee gave a solemn sanction to all these transactions.

Reformation.

In France also, the reformation began to make some progress very early. Margaret queen of Navarre, sister to Francis I. the perpetual rival of Charles V. was a great friend to the new doctrine; and it appears that, as early as the year 1523, there were in several of the provinces of France great numbers of people who had conceived the greatest aversion both to the doctrine and tyranny of the church of Rome; among whom were many of the first rank and dignity, and even some of the episcopal order. But as their number increased daily, and troubles and commotions were excited in several places on account of the religious differences, the authority of the king intervened, and many persons eminent for their virtue and piety were put to death in the most barbarous manner. Indeed Francis, who had either no religion at all, or, at best, no fixed and consistent system of religious principles, conducted himself towards the Protestants in such a manner as best answered his private views. Sometimes he resolved to invite Melancthon into France, probably with a view to please his sister the queen of Navarre, whom he loved tenderly, and who had strongly imbibed the Protestant principles. At other times he exercised the most infernal cruelty towards the reformed; and once made the following mad declaration, That if he thought the blood in his arm was tainted by the Lutheran heresy, he would have it cut off; and that he would not spare even his own children, if they entertained sentiments contrary to those of the Catholic church.

About this time the famous Calvin began to draw the attention of the public, but more especially of the queen of Navarre. His zeal exposed him to danger; and the friends of the reformation, whom Francis was daily committing to the flames, placed him more than once in the most perilous situation, from which he was delivered by the interposition of the queen of Navarre. He therefore retired out of France to Basil in Switzerland; where he published his Christian Institutions, and became afterwards so famous.

Those among the French who first renounced the jurisdiction of the Romish church, are commonly called *Lutherans* by the writers of those early times. Hence it has been supposed that they had all imbibed the peculiar sentiments of Luther. But this appears by no means to have been the case: for the vicinity of the cities of Geneva, Lausanne, &c. which had adopted the doctrines of Calvin, produced a remarkable effect upon the French Protestant churches; insomuch that, about the middle of this century, they all entered into communion with the church of Geneva. The French Protestants were called *Huguenots* * by their adversaries,

* See Huguenots.

Reforma-
tion.† See
France,
n^o 137, 141
— 149.37
In the Ne-
therlands,
&c.38
In Italy.

versaries, by way of contempt. Their fate was very severe, being persecuted with unparalleled fury; and though many princes of the blood, and of the first nobility, had embraced their sentiments, yet in no part of the world did the reformers suffer so much†. At last all commotions were quelled by the fortitude and magnanimity of Henry IV. who in the year 1598 granted all his subjects full liberty of conscience by the famous Edict of Nantes, and seemed to have thoroughly established the reformation throughout his dominions. During the minority of Louis XIV. however, this edict was revoked by Cardinal Mazarine, since which time the Protestants have often been cruelly persecuted; nor was the profession of the reformed religion in France at any time so safe as in most other countries of Europe. See REVOLUTION.

In the other parts of Europe the opposition to the church of Rome was but faint and ambiguous before the diet of Augsburg. Before that period, however, it appears from undoubted testimony, that the doctrine of Luther had made a considerable, though probably secret, progress through Spain, Hungary, Bohemia, Britain, Poland, and the Netherlands; and had in all these countries many friends, of whom several repaired to Wittemberg, in order to enlarge their knowledge by means of Luther's conversation. Some of these countries threw off the Romish yoke entirely, and in others a prodigious number of families embraced the principles of the reformed religion. It is certain indeed, and the Roman-catholics themselves acknowledge it without hesitation, that the Papal doctrines and authority would have fallen into ruin in all parts of the world at once, had not the force of the secular arm been employed to support the tottering edifice. In the Netherlands particularly, the most grievous persecutions took place, so that by the emperor Charles V. upwards of 100,000 were destroyed, while still greater cruelties were exercised upon the people by his son Philip II. The revolt of the United Provinces, however, and motives of real policy, at last put a stop to these furious proceedings; and, though in many provinces of the Netherlands, the establishment of the Popish religion was still continued, the Protestants have been long free of the danger of persecution on account of their principles.

The reformation made a considerable progress in Spain and Italy soon after the rupture between Luther and the Roman pontiff. In all the provinces of Italy, but more especially in the territories of Venice, Tuscany, and Naples, the superstition of Rome lost ground, and great numbers of people of all ranks expressed an aversion to the Papal yoke. This occasioned violent and dangerous commotions in the kingdom of Naples in the year 1546; which, however, were at last quelled by the united efforts of Charles V. and his viceroy Don Pedro di Toledo. In several places the pope put a stop to the progress of the reformation, by letting loose the inquisitors; who spread dreadful marks of their barbarity through the greatest part of Italy. These formidable ministers of superstition put so many to death, and perpetrated such horrid acts of cruelty and oppression, that most of the reformed consulted their safety by a voluntary exile, while others returned to the religion of Rome, at least in external appearance. But the inquisition, which frightened into the profession of Popery several Protestants in other parts of Italy,

could never make its way into the kingdom of Naples; nor could either the authority or intreaties of the pope engage the Neapolitans to admit even visiting inquisitors.

In Spain, several people embraced the Protestant religion, not only from the controversies of Luther, but even from those divines whom Charles V. had brought with him into Germany in order to refute the doctrines of Luther. For these doctors imbibed the pretended heresy instead of refuting it, and propagated it more or less on their return home. But the inquisition, which could obtain no footing in Naples, reigned triumphant in Spain, and by the most dreadful methods frightened the people back into Popery, and suppressed the desire of exchanging their superstition for a more rational plan of religion. It was indeed presumed that Charles himself died a Protestant; and it seems to be certain, that, when the approach of death had dissipated those schemes of ambition and grandeur which had so long blinded him, his sentiments became much more rational and agreeable to Christianity than they had ever been. All the ecclesiastics who had attended him, as soon as he expired, were sent to the inquisition, and committed to the flames, or put to death by some other method equally terrible. Such was the fate of Augustine Casal, the emperor's preacher; of Constantine Pontius, his confessor; of Egidius, whom he had named to the bishopric of Tortosa; of Bartholomew de Caranza, a Dominican, who had been confessor to King Philip and Queen Mary; with 20 others of less note.

In England, the principles of the reformation began to be adopted as soon as an account of Luther's doctrines could be conveyed thither. In that kingdom there were still great remains of the sect called *Lollards*, whose doctrine resembled that of Luther; and among whom, of consequence, the sentiments of our reformer gained great credit. Henry VIII. king of England at that time was a violent partisan of the church of Rome, and had a particular veneration for the writings of Thomas Aquinas. Being informed that Luther spoke of his favourite author with contempt, he conceived a violent prejudice against the reformer, and even wrote against him, as we have already observed. Luther did not hesitate at writing against his majesty, overcame him in argument, and treated him with very little ceremony. The first step towards public reformation, however, was not taken till the year 1529. Great complaints had been made in England, and of a very ancient date, of the usurpations of the clergy; and by the prevalence of the Lutheran opinions, these complaints were now become more general than before. The House of Commons, finding the occasion favourable, passed several bills, restraining the impositions of the clergy; but what threatened the ecclesiastical order with the greatest danger were the severe reproaches thrown out almost without opposition in the house against the dissolute lives, ambition, and avarice of the priests, and their continual encroachments on the privileges of the laity. The bills for regulating the clergy met with opposition in the House of Lords; and bishop Fisher imputed them to want of faith in the Commons, and to a formed design, proceeding from heretical and Lutheran principles, of robbing the church of her patrimony, and overturning the national religion. The Commons, however, complain-
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tion.39
In Spain.40
In Eng-
land.

Reforma- ed to the king, by their speaker Sir Thomas Audley, tion. of these reflections thrown out against them; and the bishop was obliged to retract his words.

Though Henry had not the least idea of rejecting any, even of the most absurd Romish superstitions, yet as the oppressions of the clergy suited very ill with the violence of his own temper, he was pleased with every opportunity of lessening their power. In the parliament of 1531, he showed his design of humbling the clergy in the most effectual manner. An obsolete statute was revived, from which it was pretended that it was criminal to submit to the legatine power which had been exercised by cardinal Wolsey. By this stroke the whole body of clergy was declared guilty at once. They were too well acquainted with Henry's disposition, however, to reply, that their ruin would have been the certain consequence of their not submitting to Wolsey's commission which had been given by royal authority. Instead of making any defence of this kind, they chose to throw themselves on the mercy of their sovereign; which, however, it cost them 118,840 l. to procure. A confession was likewise extorted from them, that the king was protector and supreme head of the church of England; though some of them had the dexterity to get a clause inserted, which invalidated the whole submission, viz. *in so far as is permitted by the law of Christ*.

The king, having thus begun to reduce the power of the clergy, kept no bounds with them afterwards. He did not indeed attempt any reformation in religious matters; nay, he persecuted most violently such as did attempt this in the least. Indeed, the most essential article of his creed seems to have been his own supremacy; for whoever denied this, was sure to suffer the most severe penalties, whether Protestant or Papist. But an account of the absurd and cruel conduct of this prince, and of his final quarrel with the pope on account of his refusing a dispensation to marry Anne Boleyn, is given under the article ENGLAND, n° 253—292.

He died in 1547, and was succeeded by his only son Edward VI. This amiable prince, whose early youth was crowned with that wisdom, sagacity, and virtue, that would have done honour to advanced years, gave new spirit and vigour to the Protestant cause, and was its brightest ornament, as well as its most effectual support. He encouraged learned and pious men of foreign countries to settle in England, and addressed a particular invitation to Martin Bucer and Paul Fagius, whose moderation added a lustre to their other virtues, that, by the ministry and labours of these eminent men, in concert with those of the friends of the Reformation in England, he might purge his dominions from the sordid fictions of popery, and establish the pure doctrines of Christianity in their place. For this purpose, he issued out the wisest orders for the restoration of true religion; but his reign was too short to accomplish fully such a glorious purpose. In the year 1553, he was taken from his loving and afflicted subjects, whose sorrow was inexpressible, and suited to their loss. His sister Mary (the daughter of Catharine of Arragon, from whom Henry had been separated by the famous divorce), a furious bigot to the church of Rome, and a princess whose natural character, like the spirit of her religion, was despotic and cruel, succeeded him on the British throne, and imposed anew the arbi-

trary laws and the tyrannical yoke of Rome upon the people of England. Nor were the methods she employed in the cause of superstition better than the cause itself, or tempered by any sentiments of equity or compassion. Barbarous tortures and death, in the most shocking forms, awaited those who opposed her will, or made the least stand against the restoration of Popery. And among many other victims, the learned and pious Cranmer, archbishop of Canterbury, who had been one of the most illustrious instruments of the Reformation in England, fell a sacrifice to her fury. This odious scene of persecution was happily concluded in the year 1558, by the death of the queen, who left no issue; and, as soon as her successor the lady Elizabeth ascended the throne, all things assumed a new and a pleasing aspect. This illustrious princess, whose sentiments, counsels, and projects, breathed a spirit superior to the natural softness and delicacy of her sex, exerted this vigorous and manly spirit in the defence of oppressed conscience and expiring liberty, broke anew the despotic yoke of Papal authority and superstition, and, delivering her people from the bondage of Rome, established that form of religious doctrine and ecclesiastical government which still subsists in England. This religious establishment differs, in some respects, from the plan that had been formed by those whom Edward VI. had employed for promoting the cause of the Reformation, and approaches nearer to the rites and discipline of former times; though it is widely different, and, in the most important points, entirely opposite to the principles of the Roman hierarchy. See ENGLAND, n° 293, &c.

The cause of the reformation underwent in Ireland⁴¹ the same vicissitudes and revolutions that had attended it in England. When Henry VIII. after the abolition of the Papal authority, was declared supreme head upon earth of the church of England, George Brown, a native of England, and a monk of the Augustine order, whom that monarch had created, in the year 1535, archbishop of Dublin, began to act with the utmost vigour in consequence of this change in the hierarchy. He purged the churches of his diocese from superstition in all its various forms, pulled down images, destroyed relics, abolished absurd and idolatrous rites, and, by the influence as well as authority he had in Ireland, caused the king's supremacy to be acknowledged in that nation. Henry showed, soon after, that this supremacy was not a vain title; for he banished the monks out of that kingdom, confiscated their revenues, and destroyed their convents. In the reign of Edward VI. still farther progress was made in the removal of Popish superstitions, by the zealous labours of bishop Brown, and the auspicious encouragement he granted to all who exerted themselves in the cause of the Reformation. But the death of this excellent prince, and the accession of queen Mary, had like to have changed the face of affairs in Ireland as much as in England; but her designs were disappointed by a very curious adventure, of which the following account has been copied from the papers of Richard earl of Corke. "Queen Mary having dealt severely with the Protestants in England, about the latter end of her reign signed a commission for to take the same course with them in Ireland; and to execute the same with greater force, she nominates Dr Cole one of the commissioners. This Doctor coming, with the commission, to Chester

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Curious dis-
appoint-
ment of a
Popish doc-
tor in Scot-
onland.

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on his journey, the mayor of that city hearing that her majesty was sending a messenger into Ireland, and he being a churchman, waited on the Doctor, who in discourse with the mayor taketh out of a cloke-bag a leather box, saying unto him, *Here is a commission that shall lash the Heretics of Ireland*, calling the Protestants by that title. The good woman of the house being well affected to the Protestant religion, and also having a brother named *John Edmonds* of the same, then a citizen in Dublin, was much troubled at the Doctor's words; but watching her convenient time while the mayor took his leave, and the Doctor complimented him down the stairs, she opens the box, takes the commission out, and places in lieu thereof a sheet of paper with a pack of cards wrapt up therein, the knave of clubs being faced uppermost. The Doctor coming up to his chamber, suspecting nothing of what had been done, put up the box as formerly. The next day going to the water-side, wind and weather serving him, he sails towards Ireland, and landed on the 7th of October 1558 at Dublin. Then coming to the castle, the Lord Fitz-Walters being lord-deputy, sent for him to come before him and the privy-council; who, coming in, after he had made a speech relating upon what account he came over, he presents the box unto the lord-deputy; who causing it to be opened, that the secretary might read the commission, there was nothing save a pack of cards with the knave of clubs uppermost; which not only startled the lord-deputy and council, but the Doctor, who assured them he had a commission, but knew not how it was gone. Then the lord-deputy made answer: Let us have another commission, and we will shuffle the cards in the meanwhile. The Doctor being troubled in his mind, went away, and returned into England, and coming to the court obtained another commission; but staying for a wind on the water-side, news came to him that the queen was dead: and thus God preserved the Protestants of Ireland." Queen Elizabeth was so delighted with this story, which was related to her by lord Fitz-Walter on his return to England, that she sent for Elizabeth Edmonds, whose husband's name was *Mattersbad*, and gave her a pension of 40 l. during her life.

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Of the Re-
formation
in Scot-
land.

In Scotland, the seeds of reformation were very early sown, by several noblemen who had resided in Germany during the religious disputes there. But for many years it was suppressed by the power of the pope, seconded by inhuman laws and barbarous executions. The most eminent opposer of the Papal jurisdiction was John Knox, a disciple of Calvin, a man of great zeal and invincible fortitude. On all occasions he raised the drooping spirits of the reformers, and encouraged them to go on with their work notwithstanding the opposition and treachery of the queen-regent; till at last, in 1561, by the assistance of an English army sent by Elizabeth, Popery was in a manner totally extirpated throughout the kingdom. From this period the form of doctrine, worship, and discipline established by Calvin at Geneva, has had the ascendancy in Scotland. But for an account of the difficulties which the Scottish reformers had to struggle with, and the manner in which these were overcome, &c. see SCOTLAND.

For further information on the subject of the reformation in general, we refer our readers to the works of Burnet and Brandt, to Beaufobre's *Histoire de la Reformation dans l'Empire, et les Etats de la Confession*

d'Augsbourg depuis 1517—1530, in 4 vols 8vo, Berlin 1785, and Mosheim's Ecclesiastical History. See also Sleidan *De Statu Religionis & Reipublicæ Carolo V.*; *Cæsaris Commentarii*; and Father Paul's History of the Council of Trent.

REFRACTION, in general, is the deviation of a moving body from its direct course, occasioned by the different density of the medium in which it moves; or it is a change of direction occasioned by a body's falling obliquely out of one medium into another. The word is chiefly made use of with regard to the rays of light. See OPTICS (Index) at *Refraction*.

REFRANGIBILITY OF LIGHT, the disposition of rays to be refracted. The term is chiefly applied to the disposition of rays to produce different colours, according to their different degrees of refrangibility. See CHROMATICS and OPTICS *passim*.

REFRIGERATIVE, in medicine, a remedy which refreshes the inward parts by cooling them; as clysters, ptisans, &c.

REFRIGERATORY, in chemistry, a vessel filled with cold water, through which the worm passes in distillations; the use of which is to condense the vapours as they pass through the worm.

CITIES OF REFUGE, were places provided as *Asyla*, for such as against their will should happen to kill a man. Of these cities there were three on each side Jordan: on this side were Kedesh of Naphtali, Hebron, and Schechem; beyond Jordan were Bezer, Golan, and Ramoth-Gilead. When any of the Hebrews, or strangers that dwelt in their country, happened to spill the blood of a man, they might retire thither to be out of the reach of the violent attempts of the relations of the deceased, and to prepare for their defence and justification before the judges. The manslayer underwent two trials: first before the judges of the city of refuge to which he had fled; and secondly before the judges of his own city. If found guilty, he was put to death with all the severity of the law. If he was acquitted, he was not immediately set at liberty; but, to inspire a degree of horror against even involuntary homicide, he was reconducted to the place of refuge, and obliged to continue there in a sort of banishment till the death of the high-priest. If, before this time, he ventured out, the revenger of blood might freely kill him; but after the high-priest's death he was at liberty to go where he pleased without molestation. It was necessary that the person who fled to any of the cities of refuge should understand some trade or calling, that he might not be burthensome to the inhabitants. The cities of refuge were required to be well supplied with water and necessary provisions. They were also to be of easy access, to have good roads leading to them, with commodious bridges where there was occasion. The width of the roads was to be 32 cubits or 48 feet at least. It was further required, that at all cross-ways direction-posts should be erected, with an inscription pointing out the road to the cities of refuge. The 15th of Adar, which answers to our February moon, was appointed for the city magistrates to see that the roads were in good condition. No person in any of these cities was allowed to make weapons, lest the relations of the deceased should be furnished with the means of gratifying their revenge. Deut. xix. 3. iv. 41. 43.; Josh. xx. 7. Three other cities of refuge were conditionally promised, but never granted. See ASYLUM.

REGU.

Refugees
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Regata.

REFUGEES, a term at first applied to the French Protestants, who, by the revocation of the edict of Nantz, were constrained to fly from persecution, and take refuge in foreign countries. Since that time, however, it has been extended to all such as leave their country in times of distress; and hence, since the revolt of the British colonies in America, we have frequently heard of *American refugees*.

REGALE, a magnificent entertainment or treat, given to ambassadors and other persons of distinction, to entertain or do them honour.

It is usual in Italy, at the arrival of a traveller of eminence, to send him a regale, that is, a present of sweetmeats, fruits, &c. by way of refreshment.

REGALIA, in law, the rights and prerogatives of a king. See **PREROGATIVE**.

Regalia is also used for the apparatus of a coronation; as the crown, the sceptre with the cross, that with the dove, St Edward's staff, the globe, and the orb with the cross, four several swords, &c.—The regalia of Scotland were deposited in the castle of Edinburgh in the year 1707, in what is called the *Jewel Office*. This room was lately opened by some commissioners appointed by the king, when the large chest in which it is supposed they were placed was found; but as it has not, that we have heard of, been opened, it is impossible to say whether they be there or not. It is very generally thought they were carried to the Tower of London in the reign of Queen Anne; and a crown is there shewn which is called the Scotch crown. We do not believe, however, that that is the real crown of Scotland; and think it probable that the Scotch regalia are in the chest which was lately found. If they are not there, they must have been taken away by stealth, and either destroyed or melted down for we do not believe that they are in the Tower of London.

LORD of REGALITY, in Scots law. See **LAW**, n° clviii. 4.

COURT of REGARD. See *FOREST-Courts*.

REGARDANT, in heraldry, signifies looking behind; and it is used for a lion, or other beast, with his face turned towards his tail.

REGARDER, an ancient officer of the king's forest, sworn to make the regard of the forest every year; that is, to take a view of its limits, to inquire into all offences and defaults committed by the foresters within the forest, and to observe whether all the officers executed their respective duties. See *FOREST-Laws*.

REGATA, or **REGATTA**, a species of amusement peculiar to the republic of Venice. This spectacle has the power of exciting the greatest emotions of the heart, admiration, enthusiasm, a sense of glory, and the whole train of our best feelings. The grand regata is only exhibited on particular occasions, as the visits of foreign princes and kings at Venice.

It is difficult to give a just idea of the ardour that the notice of a *regata* spreads among all classes of the inhabitants of Venice. Proud of the exclusive privilege of giving such a spectacle, through the wonderful local circumstances of their city, they are highly delighted with making preparations a long time before, in order to contribute all they can towards the perfection and enjoyment of the spectacle. A thousand interests are formed and augmented every day; parties in favour of the different competitors who are known; the protection of young

noblemen given to the gondoliers in their service; the desire of honours and rewards in the aspirants; and, in the midst of all this, that ingenious national industry, which awakes the Venetians from their habitual indolence, to derive advantage from the business and agitation of the moment: all these circumstances united give to the numerous inhabitants of this lively city a degree of spirit and animation which render it during that time a delightful abode in the eyes of the philosopher and the stranger. Crowds of people flock from the adjacent parts, and travellers joyfully repair to this scene of gaiety and pleasure.

Although it is allowable for any man to go and inscribe his name in the list of combatants until the fixed number is complete, it will not be amiss to remark one thing, which has relation to more ancient times. The state of a gondolier* is of much consideration among the people; which is very natural, that having been the primitive condition of the inhabitants of this country. But, besides this general consideration, there are among them some families truly distinguished and respected by their equals, whose antiquity is acknowledged, and who, on account of a succession of virtuous men, able in their profession, and honoured for the prizes they have carried off in these contests, form the body of noble gondoliers; often more worthy of that title than the higher order of nobility, who only derive their honours from the merit of their ancestors, or from their own riches. The consideration for those families is carried so far, that, in the disputes frequently arising among the gondoliers in their ordinary passage of the canals, we sometimes see a quarrel instantly made up by the simple interposition of a third person, who has chanced to be of this reverend body. They are rigid with respect to misalliances in their families, and they endeavour reciprocally to give and take their wives among those of their own rank. But we must remark here, with pleasure, that these distinctions infer no inequality of condition, nor admit any oppression of inferiors, being founded solely on laudable and virtuous opinions. Distinctions derived from fortune only, are those which always outrage nature, and often virtue.

In general, the competitors at the great regatas are chosen from among these families of reputation. As soon as they are fixed upon for this exploit, they spend the intermediate time in preparing themselves for it, by a daily assiduous and fatiguing exercise. If they are in service, their masters during that time not only give them their liberty, but also augment their wages. This custom would seem to indicate, that they look upon them as persons consecrated to the honour of the nation, and under a sort of obligation to contribute to its glory.

At last the great day arrives. Their relations assemble together: they encourage the heroes, by calling to their minds the records of their families; the women present the oar, beseeching them, in an epic tone, to remember that they are the sons of famous men, whose steps they will be expected to follow: this they do with as much solemnity as the Spartan women presented the shield to their sons, bidding them either return with or upon it. Religion, as practised among the lower class of people, has its share in the preparations for this enterprize. They cause masses to be said; they make vows to some particular church; and they arm their boats for the contest with the images of those saints who are most in vogue. Sorcerers are not forgotten upon

Regata.

* See *Gondola*.

Regata.

upon this occasion. For gondoliers who have lost the race often declare, that witchcraft had been practised against them, or certainly they must have won the day. Such a supposition prevents a poor fellow from thinking ill of himself; an opinion that might be favourable to him another time.

The course is about four miles. The boats start from a certain place, run through the great winding canal, which divides the town into two parts, turn round a picket, and, coming back the same way, go and seize the prize, which is fixed at the acutest angle of the great canal, on the convex side, so that the point of sight may be the more extended, and the prize seized in the sight of the spectators on both sides.

According to the number of competitors, different races are performed in different sorts of boats; some with one oar and others with two. The prizes proposed are four, indicated by four flags of different colours, with the different value of the prizes marked upon them.—These flags, public and glorious monuments, are the prizes to which the competitors particularly aspire. But the government always adds to each a genteel sum of money; besides that the conquerors, immediately after the victory, are surrounded by all the *beau monde*, who congratulate and make them presents; after which they go, bearing their honourable trophy in their hand, down the whole length of the canal, and receive the applause of innumerable spectators.

This grand canal, ever striking by the singularity and beauty of the buildings which border it, is, upon these occasions, covered with an infinity of spectators, in all sorts of barges, boats, and gondolas. The element on which they move is scarcely seen; but the noise of oars, the agitation of arms and bodies in perpetual motion, indicate the spectacle to be upon the water. At certain distances, on each side of the shore, are erected little amphitheatres and scaffoldings, where are placed bands of music; the harmonious sound of which predominates now and then over the buzzing noise of the people. Some days before a *regata*, one may see on the great canal many boats for pleasure and entertainment. The young noble, the citizen, the rich artizan, mounts a long boat of six or eight oars; his gondoliers decorated with rich and singular dresses, and the vessel itself adorned with various stuffs. Among the nobles there are always a number who are at a considerable expence in these decorations; and at the *regata* itself exhibit on the water personages of mythologic story, with the heroes of antiquity in their train, or amuse themselves with representing the customs of different nations: in short, people contribute with a mad sort of magnificence, from all quarters, to this masquerade, the favourite diversion of the Venetians. But these great machines, not being the less in motion on account of their ornaments, are not merely destined to grace the show: they are employed at the *regata*, at every moment, to range the people, to protect the course, and to keep the avenue open and clear to the goal. The nobility, kneeling upon cushions at the prow of their vessels, are attentive to these matters, and announce their orders to the most restive, by darting at them little gilded or silvered balls, by means of certain bows, with which they are furnished on this occasion. And this is the only appearance of coercion in the Venetian police on these days of the greatest tumult: nor is there to be seen, in any part of the city, a body of

guards or patrol, nor even a gun or a halbert. The mildness of the nation, its gaiety, its education in the habit of believing that the government is ever awake, that it knows and sees every thing; its respectful attachment to the body of patricians; the sole aspect of certain officers of the police in their robes, dispersed in different places, at once operate and explain that tranquillity, that security, which we see in the midst of the greatest confusion, and that surprising docility in so lively and fiery a people. Regattas have been attempted on the river Thames, but they were but humble imitations of the Venetian amusement.

REGEL, or RIGEL, a fixed star of the first magnitude, in Orion's left foot.

REGENERATION, in theology, the act of being born again by a spiritual birth, or the change of heart and life experienced by a person who forsakes a course of vice, and sincerely embraces a life of virtue and piety.

REGENSBURG, or RATISBON. See RATISBON.

REGENT, one who governs a kingdom during the minority or absence of the king.

In France, the queen-mother had the regency of the kingdom during the minority of the king, under the title of *queen-regent*.

In England, the methods of appointing this guardian or regent have been so various, and the duration of his power so uncertain, that from hence alone it may be collected that his office is unknown to the common law; and therefore (as Sir Edward Coke says, 4 Inst. 58.) the surest way is to have him made by authority of the great council in parliament. The earl of Pembroke by his own authority assumed in very troublesome times the regency of Henry III. who was then only nine years old; but was declared of full age by the pope at 17, confirmed the great charter at 18, and took upon him the administration of the government at 20. A guardian and councils of regency were named for Edward III. by the parliament, which deposed his father; the young king being then 15, and not assuming the government till three years after. When Richard II. succeeded at the age of 11, the duke of Lancaster took upon him the management of the kingdom till the parliament met, which appointed a nominal council to assist him. Henry V. on his death-bed named a regent and a guardian for his infant son Henry VI. then nine months old; but the parliament altered his disposition, and appointed a protector and council, with a special limited authority. Both these princes remained in a state of pupilage till the age of 23. Edward V. at the age of 13, was recommended by his father to the care of the duke of Gloucester; who was declared protector by the privy-council. The statutes 25 Hen. VIII. c. 12. and 28 Hen. VIII. c. 7. provided, that the successor, if a male and under 18, or if a female and under 16, should be till such age in the governance of his or her natural mother, (if approved by the king), and such other counsellors as his majesty should by will or otherwise appoint; and he accordingly appointed his 16 executors to have the government of his son Edward VI. and the kingdom, which executors elected the earl of Hartford protector. The statutes 24 Geo. II. c. 24. in case the crown should descend to any of the children of Frederick late prince of Wales under the age of 18, appointed the princess dowager;—and that of 5 Geo. III. c. 27. in case of a like descent to any of his present majesty's children, empowers the king to name either the

Regent

Regent

queen

Regent,
Reggio.

queen or princess dowager, or any descendant of king George II. residing in this kingdom;—to be guardian and regent till the successor attains such age, assisted by a council of regency; the powers of them all being expressly defined and set down in the several acts.

REGENT also signifies a professor of arts and sciences in a college, having pupils under his care; but it is generally restrained to the lower classes, as to rhetoric, logic, &c. those of philosophy being called *professors*. In the English universities it is applied to Masters of Arts under five years standing, and to Doctors under two, as non-regent is to those above that standing.

Swinburne's
Travels in
the Two
Sicilies.

REGGIO, an ancient and considerable town of Italy, in the kingdom of Naples, and in the Farther Calabria, with an archbishop's see, and a woollen manufactory. It is seated in a delightful country, which produces plenty of oranges, and all their kindred fruits. The olives are exquisite, and high-flavoured. The town, however, can boast of neither beautiful buildings nor strong fortifications. Of its edifices the Gothic cathedral is the only striking one, but it affords nothing curious in architecture. The citadel is far from formidable, according to the present system of tactics; nor could the city walls make a long resistance against any enemy but Barbary corsairs; and even these they have not always been able to repel, for in 1543 it was laid in ashes by Barbarossa. Mustapha sacked it 15 years after, and the desolation was renewed in 1593 by another set of Turks. Its exposed situation, on the very threshold of Italy, and fronting Sicily, has from the earliest period rendered it liable to attacks and devastation. The Chalcidians seized upon it, or, according to the usual Greek phrase, founded it, and called the colony *Rhegion*, from a word that means a break or crack, alluding to its position on the point where Sicily broke off from the continent. Anaxilas oppressed its liberties. Dionysius the Elder took it, and put many of the principal citizens to death, in revenge for their having refused his alliance. The Campanian legion, sent to protect the Rhegians, turned its sword against them, massacred many inhabitants, and tyrannized over the remainder, till the Roman senate thought proper to punish these traitors with exemplary severity, though at the same time it entered into league with the revolted garrison of Messina. This union with a set of villains, guilty of the same crime, proved that no love of justice, but political reasons alone, drew down its vengeance on the Campanians.—It is about 12 miles S. E. of Messina, and 190 S. by E. of Naples. E. Long. 16. 0. N. Lat. 38. 4.

REGGIO, an ancient, handsome, and strong town of Italy, in the duchy of Modena, with a strong citadel, and a bishop's see. It has been ruined several times by the Goths, and other nations. In the cathedral are paintings by the greatest masters; and in the square is the statue of Brennus, chief of the Gauls. The inhabitants are about 22,000, who carry on a great trade in silk. It was taken by prince Eugene in 1706, and by the king of Sardinia in 1742. It is seated in a fertile country to the south of the Apennines, and to the north of a spacious plain, 15 miles north-west of Modena, and 80 south-east of Milan. E. Long. 11. 5. N. Lat. 44. 43.—The duchy of this name is bounded on the west by that of Modena, and produces a great deal of silk, and belongs to the duke of Modena, except the marquise of St Martin, which belongs to a prince of that name.

REGIAM MAJESTATEM. See LAW, n° clv. 3.

REGICIDE, KING-KILLER, a word chiefly used with us in speaking of the persons concerned in the trial, condemnation, and execution, of king Charles I.

REGIFUGIUM was a feast celebrated at Rome on the 24th of February, in commemoration of the expulsion of *Tarquinius Superbus*, and the abolition of regal power. It was also performed on the 26th of May, when the king of the sacrifices, or *Rex Sacrorum*, offered bean flour and bacon, in the place where the assemblies were held. The sacrifice being over, the people hastened away with all speed, to denote the precipitate flight of King Tarquin.

REGIMEN, the regulation of diet, and, in a more general sense, of all the non-naturals, with a view to preserve or restore health. See ABSTINENCE, ALIMENT, FOOD, DIET, DRINK, and MEDICINE.

The vicissitude of exercise and rest forms also a necessary part of regimen. See EXERCISE.

It is beneficial to be at rest now and then, but more so frequently to use exercise; because inaction renders the body weak and listless, and labour strengthens it. But a medium is to be observed in all things, and too much fatigue is to be avoided: for frequent and violent exercise overpowers the natural strength, and wastes the body; but moderate exercise ought always to be used before meals. Now, of all kinds of exercise, riding on horseback is the most convenient: or if the person be too weak to bear it, riding in a coach, or at least in a litter: next follow fencing, playing at ball, running, walking. But it is one of the inconveniences of old age, that there is seldom sufficient strength for using bodily exercise, though it be extremely requisite for health: wherefore frictions with the flesh-brush are necessary at this time of life; which should be performed by the person himself, if possible; if not, by his servants.

Sleep is the sweet soother of cares, and restorer of strength; as it repairs and replaces the wastes that are made by the labours and exercises of the day. But excessive sleep has its inconveniences; for it blunts the senses, and renders them less fit for the duties of life. The proper time for sleep is the night, when darkness and silence invite and bring it on: day-sleep is less refreshing; which rule if it be proper for the multitude to observe, much more is the observance of it necessary for persons addicted to literary studies, whose minds and bodies are more susceptible of injuries.

REGIMEN, in grammar, that part of syntax, or construction, which regulates the dependency of words, and the alterations which one occasions in another.

REGIMEN for Seamen. See SEAMEN.

REGIMENT, is a body of men, either horse, foot, or artillery, commanded by a colonel, lieutenant-colonel, and major. Each regiment of foot is divided into companies; but the number of companies differs: though in Britain our regiments are generally 10 companies, one of which is always grenadiers, exclusive of the two independent companies. Regiments of horse are commonly six troops, but there are some of nine. Dragoon regiments are generally in war-time 8 troops, and in time of peace but 6. Each regiment has a chaplain, quarter-master, adjutant, and surgeon. Some German regiments consist of 2000 foot; and the regiment of Picardy in France consisted of 6000, being 120 companies, of 50 men in each company.

Regiam
Regiment.

Regiomon-
tanus
||
Register.

Regiments were first formed in France in the year 1558, and in England in the year 1660.

REGIOMONTANUS. See MULLER.

REGION, in geography, a large extent of land, inhabited by many people of the same nation, and inclosed within certain limits or bounds.

The modern astronomers divide the moon into several regions, or large tracts of land, to each of which they give its proper name.

REGION, in physiology, is taken for a division of our atmosphere, which is divided into the upper, middle, and lower regions.

The upper region commences from the tops of the mountains, and reaches to the utmost limits of the atmosphere. In this region reign a perpetual, equable, calmness, clearness, and serenity. The middle region is that in which the clouds reside, and where meteors are formed, extending from the extremity of the lowest to the tops of the highest mountains. The lowest region is that in which we breathe, which is bounded by the reflection of the sun's rays; or by the height to which they rebound from the earth. See ATMOSPHERE and AIR.

Æthereal REGION, in cosmography, is the whole extent of the universe, in which is included all the heavenly bodies, and even the orb of the fixed stars.

Elementary REGION, according to the Aristotelians, is a sphere terminated by the concavity of the moon's orb, comprehending the atmosphere of the earth.

REGION, in anatomy, a division of the human body, otherwise called *cavity*, of which anatomists reckon three, viz. the upper region, or that of the head; the middle region, that of the thorax or breast; and the lower, the abdomen, or belly. See ANATOMY.

REGION, in ancient Rome, was a part or division of the city. The regions were only four in number, till Augustus Cæsar's time, who divided the city into fourteen; over each of which he settled two surveyors, called *curatores viarum*, who were appointed annually, and took their divisions by lot. These fourteen regions contained four hundred and twenty-four streets, thirty-one of which were called *greater* or *royal streets*, which began at the gilt pillar that stood at the entry of the open place, in the middle of the city. The extent of these divisions varied greatly, some being from 12000 or 13000 to 33000 feet or upwards in circumference. Authors, however, are not agreed as to the exact limits of each. The *curatores viarum* wore the purple, had each two lictors in their proper divisions, had slaves under them to take care of fires, that happened to break out. They had also two officers, called *denunciatores*, in each region, to give account of any disorders. Four *vico-magistri* also were appointed in each street, who took care of the streets allotted them, and carried the orders of the city to each citizen.

REGISTER, a public book, in which are entered and recorded memoirs, acts, and minutes, to be had recourse to occasionally for knowing and proving matters of fact. Of these there are several kinds; as,

1. Register of deeds in Yorkshire and Middlesex, in which are registered all deeds, conveyances, wills, &c. that affect any lands or tenements in those counties, which are otherwise void against any subsequent purchasers or mortgagees, &c. but this does not extend to any copyhold estate, nor to leases at a rack-rent, or

where they do not exceed 21 years. The registered memorials must be ingrossed on parchment, under the hand and seal of some of the granters or grantees, attested by witnesses who are to prove the signing or sealing of them and the execution of the deed. But these registers, which are confined to two counties, are in Scotland general, by which the laws of North Britain are rendered very easy and regular. Of these there are two kinds; the one general, fixed at Edinburgh, under the direction of the lord-register; and the other is kept in the several shires, stewartries, and regalities, the clerks of which are obliged to transmit the registers of their respective courts to the general register.

2. Parish-registers are books in which are registered the baptisms, marriages, and burials, of each parish.

REGISTERS were kept both at Athens and Rome, in which were inserted the names of such children as were to be brought up, as soon as they were born. Marcus Aurelius required all free persons to give in accounts of their children, within 30 days after the birth, to the treasurer of the empire, in order to their being deposited in the temple of Saturn, where the public acts were kept. Officers were also appointed as public registers in the provinces, that recourse might be had to their lists of names, for settling disputes, or proving any person's freedom.

REGISTER Ships, in commerce, are vessels which obtain a permission either from the king of Spain, or the council of the Indies, to traffic in the ports of the Spanish West Indies; which are thus called, from their being registered before they set sail from Cadiz for Buenos Ayres.

REGISTERS, in chemistry, are holes, or chinks with stopples, contrived in the sides of furnaces, to regulate the fire; that is, to make the heat more intense or remits, by opening them to let in the air, or keeping them close to exclude it. There are also registers in the steam-engine. See STEAM-Engine.

REGISTRAR, an officer in the English universities, who has the keeping of all the public records.

REGIUM, *REGIUM Lep di*, *Regium Lepidum*, (anc. geog.); a town of Cisalpine Gaul, on the Via Æmilia, so called from Æmilius Lepidus, who was consul with C. Flaminius; but whence it was surnamed *Regium* is altogether uncertain. Tacitus relates, that at the battle of Bedriacum, a bird of an unusual size was seen perching in a famous grove near Regium Lepidum. Now called *Reggio*, a city of Modena. E. Long. 11. 0. N. Lat. 44. 45. See REGGIO.

REGNARD (John Francis), one of the best French comic writers after Moliere, was born at Paris in 1647. He had scarcely finished his studies, when an ardent passion for travelling carried him over the greatest part of Europe. When he settled in his own country, he was made a treasurer of France, and lieutenant of the waters and forests: he wrote a great many comedies; and, though naturally of a gay genius, died of chagrin in the 52d year of his age. His works, consisting of comedies and travels, were printed at Rouen, in 5 vols 12mo, 1732.

REGNIER (Mathurin), the first French poet who succeeded in satire, was born at Chartres in 1573. He was brought up to the church, a place for which his debaucheries rendered him very unsuitable; and these by his own confession were so excessive, that at 30 he had all

Registers
||
Regnier.

Regnum || all the infirmities of age. Yet he obtained a canonry in the church of Chartres, with other benefices; and died in 1613. There is a neat Elzevir edition of his works, 12mo, 1652, Leyden; but the most elegant is that with notes by M. Broffette, 4to, 1729, London.

REGNIER DES MARETS (Seraphin), a French poet, born at Paris in 1632. He distinguished himself early by his poetical talents, and in 1684 was made perpetual secretary to the French academy on the death of Mezeray: it was he who drew up all those papers in the name of the academy against Furetiere: the king gave him the priory of Grammont, and he had also an abbey. He died in 1713, and his works are, French, Italian, Spanish, and Latin poems, 2 vols; a French grammar; and an Italian translation of Anacreon's odes, with some other translations.

REGNUM (anc. geog.), a town of the Regni, a people in Britain, next the Cantii, now Surry, Suffex, and the coast of Hampshire, (Camden); a town situated, by the Itinerary numbers, on the confines of the Belgæ, in a place now called *Ringwood*, in Hampshire, on the rivulet Avon, running down from Salisbury, and about ten miles or more distant from the sea.

REGRATOR, signifies him who buys and sells any wares or victuals in the *same* market or fair: and regrators are particularly described to be those who buy, or get into their hands, in fairs or markets, any grain, fish, butter, cheese, sheep, lambs, calves, swine, pigs, geese, capons, hens, chickens, pigeons, conies, or other dead victuals whatsoever, brought to a fair or market to be sold there, and do sell the same again in the same fair, market, or place, or in some other within four miles thereof.

Regrating is a kind of *buckstry*, by which victuals are made dearer; for every seller will gain something, which must of consequence enhance the price. And, in ancient times, both the engrosser and regrator were comprehended under the word *forestaller*. Regrators are punishable by loss and forfeiture of goods, and imprisonment, according to the first, second, or third offence, &c.

REGENSBURG, a handsome, though small town of Swisserland, in the canton of Zurich, and capital of a bailiwick of the same name, with a strong castle; seated on a hill, which is part of Mount Jura. There is a well sunk through a rock, 36 fathoms deep.

REGULAR, denotes any thing that is agreeable to the rules of art: thus we say, a regular building, verb, &c.

A regular figure, in geometry, is one whose sides, and consequently angles, are equal; and a regular figure with three or four sides is commonly termed an *equilateral triangle* or *square*, as all others with more sides are called *regular polygons*.

REGULAR, in a monastery, a person who has taken the vows; because he is bound to observe the rules of the order he has embraced.

REGULATION, a rule or order prescribed by a superior, for the proper management of some affair.

REGULATOR of a WATCH, the small spring belonging to the balance; serving to adjust its motions, and make it go faster or slower. See *WATCH*.

REGULBIUM, or **REGULVIUM**, (Notitia Imperii); mentioned nowhere else more early: a town of the Cantii, in Britain. Now Reculver, a village on the

coast, near the island Thanet, towards the Thames, to the north of Canterbury, (Camden).

REGULUS (M. Attilius), a consul during the first Punic war. He reduced Brundisium, and in his second consulship he took 64 and sunk 30 galleys of the Carthaginian fleet, on the coasts of Sicily. Afterwards he landed in Africa; and so rapid was his success, that in a short time he made himself master of about 200 places of consequence on the coast. The Carthaginians sued for peace, but the conqueror refused to grant it; and soon after he was defeated in a battle by Xanthippus, and 30,000 of his men were left on the field of battle, and 15,000 taken prisoners. Regulus was in the number of the captives, and he was carried in triumph to Carthage. He was sent by the enemy to Rome, to propose an accommodation and an exchange of prisoners; and if his commission was unsuccessful, he was bound by the most solemn oaths to return to Carthage without delay. When he came to Rome, Regulus dissuaded his countrymen from accepting the terms which the enemy proposed; and when his opinion had had due influence on the senate, Regulus retired to Carthage agreeable to his engagements. The Carthaginians were told that their offers of peace had been rejected at Rome by the means of Regulus; and therefore they prepared to punish him with the greatest severity. His eye-brows were cut, and he was exposed for some days to the excessive heat of the meridian sun, and afterwards confined in a barrel, whose sides were everywhere filled with large iron spikes, till he died in the greatest agonies. His sufferings were heard of at Rome; and the senate permitted his widow to inflict whatever punishment she pleased on some of the most illustrious captives of Carthage which were in their hands. She confined them also in presses filled with sharp iron points; and was so exquisite in her cruelty, that the senate interfered, and stopped the barbarity of her punishment. Regulus died about 251 years before Christ.—Memmius, a Roman, made governor of Greece by Caligula. While Regulus was in his province, the emperor wished to bring the celebrated statue of Jupiter Olympius by Phidias to Rome, but this was supernaturally prevented; and according to ancient authors, the ship which was to convey it was destroyed by lightning, and the workmen who attempted to remove the statue were terrified away by sudden noises.—A man who condemned Sejanus.—Roscius, a man who held the consulship but for one day, in the reign of Vitellius.

REGULUS, in chemistry, an imperfect metallic substance that falls to the bottom of the crucible, in the melting of ores or impure metallic substances. It is the finest or purest part of the metal; and, according to the alchemists, is denominated *regulus*, or *little king*, as being the first-born of the royal metallic blood. According to them, it is really a son, but not a perfect man; *i. e.* not yet a perfect metal, for want of time and proper nourishment. To procure the regulus or mercurial parts of metals, &c. flux powders are commonly used; as nitre, tartar, &c. which purge the sulphureous part adhering to the metal, by attracting and absorbing it to themselves.

REGULUS of Antimony. See *CHEMISTRY*, n° 1252—1257; and see *Index* there, at *Antimony*.

REGULUS of Arsenic. See *CHEMISTRY*, n° 1267, &c. and 1285—1294. The ancient process for making regulus.

Regulus.

Regulus.

Regulus of arsenic consisted in mixing four parts of arsenic with two parts of black flux, one part of borax, and one part of filings of iron or of copper, and quickly fusing the mixture in a crucible. After the operation is finished, a regulus of arsenic will be found at the bottom of the crucible of a white livid colour, and of considerable solidity. The iron and copper employed in this process are not intended, as in the operation for the martial regulus of antimony, to precipitate the arsenic, and to separate it from sulphur or any other substance; for the white arsenic is pure, and nothing is to be taken from it; but, on the contrary, the inflammable principle is to be added to reduce it to a regulus. The true use of these metals in the present operation is to unite with the regulus of arsenic, to give it more body, and to prevent its entire dissipation in vapours. Hence the addition of iron, while it procures these advantages, has the inconvenience of altering the purity of the regulus: for the metallic substance obtained is a regulus of arsenic allayed with iron. It may, however, be purified from the iron by sublimation in a close vessel; by which operation the regulified arsenical part, which is very volatile, is sublimed to the top of the vessel, and is separated from the iron, which being of a fixed nature remains at the bottom. We are not, however, very certain, that in this kind of rectification the regulus of arsenic does not carry along with it a certain quantity of iron; for, in general, a volatile substance raises along with it, in sublimation, a part of any fixed matter with which it happened to be united.

Mr Brandt proposes another method, which we believe is preferable to that described. He directs that white arsenic should be mixed with soap. Instead of the soap, olive-oil may be used, which has been found to succeed well. The mixture is to be put into a retort or glass matrass, and to be distilled or sublimed with fire, at first very moderate, and only sufficient to raise the oil. As the oils, which are not volatile, cannot be distilled but by a heat sufficient to burn and decompose them, the oil therefore which is mixed with the arsenic undergoes these alterations, and after having penetrated the arsenic thoroughly is reduced to a coal. When no more oily vapours rise, we may then know that the oil is reduced to coal. Then the fire must be increased, and the metallised arsenic will be soon sublimed to the upper part of the vessel, in the inside of which it will form a metallic crust. When no more sublimes, the vessel is to be broken, and the adhering crust of regulus of arsenic is to be separated. The regulus obtained by this first operation is not generally perfect, or not entirely so, as a part of it is always overcharged with fuliginous matter, and another part has not enough of phlogiston; which latter part adheres to the inner surface of the crust, and forms grey or brown crystals. This sublimate must then be mixed with a less quantity of oil, and sublimed a second time like the first; and even, to obtain as good regulus as may be made, a third sublimation in a close vessel, and without oil, is necessary. During this operation, the oil which rises is more fetid than any other empyreumatic oil, and is almost insupportable. This smell certainly proceeds from the arsenic; the smell of which is exceedingly strong and disagreeable when heated.

Regulus of arsenic made by the method we have described, and which we consider as the only one which

is pure, has all the properties of a semimetal. It has metallic gravity, opacity, and lustre. Its colour is white and livid, it tarnishes in the air, is very brittle, but much more volatile than any other semimetal. It easily loses its inflammable principle, when sublimed in vessels into which the air has access; the sublimate having the appearance of grey flowers, which by repeated sublimations become entirely white, and similar to white crystalline arsenic. When regulus of arsenic is heated quickly and strongly in open air, as under a muffle, it burns with a white or bluish flame, and dissipates in a thick fume, which has a very fetid smell, like that of garlic.

Regulus of arsenic may be combined with acids and most metals. See ARSENIC, n^o 17. We shall only farther observe here, that, according to Mr Brandt, in the Swedish Memoirs, the regulus of arsenic cannot be united with mercury. Although the phenomena exhibited by white arsenic and regulus of arsenic in solutions and allays are probably the same, yet an accurate comparison of these would deserve notice, especially if the regulus employed were well made; for some difference must proceed from the greater or less quantity of what in the old chemistry is called phlogiston with which it is united. See CHEMISTRY, n^o 1288, &c.

Regulus of Cobalt, is a semimetal lately discovered, and not yet perfectly well known. It receives its name from cobalt, because it can only be extracted from the mineral properly so called. The process by which this semimetal is obtained, is similar to those generally used for the extraction of metals from their ores. The cobalt must be thoroughly torrifed, to deprive it of all the sulphur and arsenic it contains; and the unmetallic earthy and stony matters must be separated by washing. The cobalt thus prepared is then to be mixed with double or triple its quantity of black flux, and a little decrepitated sea-salt; and must be fused either in a forge or in a hot furnace, for this ore is very difficult of fusion. When the fusion has been well made, we find upon breaking the crucible, after it has cooled, a metallic regulus covered with a scoria of a deep blue colour. The regulus is of a white metallic colour. The surface of its fracture is close and small-grained. The semimetal is hard, but brittle. When the fusion has been well made, its surface appears to be carved with many convex threads, which cross each other diversely. As almost all cobalts contain also bismuth, and even as much as of the regulus itself, this bismuth is reduced by the same operation, and precipitated in the same manner, as the regulus of cobalt; for although these two metals are frequently mixed in the same mineral, that is, in cobalt, they are incapable of uniting together, and are always found distinct and separate from one another when they are melted together. At the bottom of the crucible then we find both regulus of cobalt and bismuth. The latter, having a greater specific gravity, is found under the former. They may be separated from each other by the blow of a hammer. Bismuth may be easily distinguished from the regulus of cobalt, not only from its situation in the crucible, but also by the large shining facets which appear in its fracture, and which are very different from the close ash-coloured grain of regulus of cobalt.

This semimetal is more difficult of fusion than any other;

Regulus.

Regulus
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Reichen-
berg.

other; is less easily calcinable, and much less volatile. Its calx is grey, and more or less brown; and when fused with vitrifiable matters, it changes into a beautiful blue glass called *smalt*. This calx, then, is one of those which preserve always a part of their inflammable principle. It is soluble in acids, as the regulus is. This regulus is soluble in vitriolic, marine, nitrous acids, and in aqua-regia, to all which it communicates colours. The solution in vitriolic acid is reddish; the solution in marine acid is of a fine bluish-green when hot, and its colour is almost totally effaced when cold, but is easily recoverable by heating it, without being obliged to uncork the bottle containing it. This solution of the calx of regulus of cobalt is the basis of the sympathetic ink; for without marine acid this ink cannot be made. All the solutions of regulus of cobalt may be precipitated by alkalis; and these precipitates are blue, which colour they retain when vitrified with the strongest fire.

Not only sympathetic ink, but also regulus of cobalt, may be made from the zaffre commonly sold; which is nothing else than the calx of regulus of cobalt mixed with more or less pulverised flints. For this purpose we must separate as well as we can the powder of flints from it, by washing, as M. Beaumé does, and then reduce it with black flux and sea-salt. Regulus of cobalt seems incapable of uniting with sulphur: but it easily unites with liver of sulphur; and the union it forms is so intimate, that M. Beaumé could not separate these two substances otherwise than by precipitation with an acid.

Many curious and interesting remarks are still to be discovered concerning this singular semimetal, and we may hope to receive further information from the endeavours of chemists who have undertaken the examination of it. M. Beaumé particularly has made considerable experiments on this subject, part of which he communicates to the public in his Course of Chemistry, and from whom we have borrowed the most of the above observations. See CHEMISTRY, n° 1294, &c.

REHEARSAL, in music and the drama, an essay or experiment of some composition, generally made in private, previous to its representation or performance in public, in order to render the actors and performers more perfect in their parts.

REICHENBERG, in Bohemia, 95 miles west of Prague, 205 north-west of Vienna, N. Lat. 50. 2. E. Long. 12. 25. is only remarkable as the place where the Prussian army defeated the Austrians on the 21st of April 1757. The Austrian army, commanded by Count Königseck, was posted near Reichenberg, and was attacked by the Prussians under the command of the prince of Brunswick Bevern. The Prussians were 20,000, and the Austrians 28,000: the action began at half after six in the morning, when the Prussian lines were formed, and attacked the Austrian cavalry, which was ranged in three lines of 30 squadrons, and their two wings sustained by the infantry, which was posted among felled trees and intrenchments. The Austrians had a village on their right, and a wood on their left, where they were intrenched. The Prussian dragoons and grenadiers cleared the intrenchment and wood, and entirely routed the Austrian cavalry; at the same time, the redoubts that covered Reichenberg were taken by General Lestewitz; and the Austrians were entirely

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defeated. The Prussians had seven officers and 100 men killed; 14 officers and 150 men wounded. The Austrians had 1000 men killed and wounded; 20 of their officers and 400 men taken prisoners. The action ended at eleven.

REIN-DEER, or *Tarandus*. See CERVUS, n° 4.

REINS, in anatomy, the same with KIDNEYS. See ANATOMY, n° 101.

REINS of a *Bridle*, are two long slips of leather, fastened on each side of a curb or snaffle, which the rider holds in his hand, to keep the horse in subjection.

There is also what is called *false reins*; which is a lath of leather, passed sometimes through the arch of the banquet, to bend the horse's neck.

REJOINDER, in law, is the defendant's answer to the plaintiff's replication or reply. Thus, in the court of chancery, the defendant puts in an answer to the plaintiff's bill, which is sometimes also called an *exception*; the plaintiff's answer to that is called a *replication*, and the defendant's answer to that a *rejoindre*.

RELAND (Adrian), an eminent Orientalist, born at Ryp, in North Holland, in 1676. During three years study under Surenhusius, he made an uncommon progress in the Hebrew, Syriac, Chaldee, and Arabic languages; and these languages were always his favourite study. In 1701, he was, by the recommendation of King William, appointed professor of Oriental languages and ecclesiastical antiquities in the university of Utrecht; and died of the small-pox in 1718. He was distinguished by his modesty, humanity, and learning; and carried on a correspondence with the most eminent scholars of his time. His principal works are, 1. An excellent description of Palestine. 2. Five dissertations on the Medals of the ancient Hebrews, and several other dissertations on different subjects. 3. An Introduction to the Hebrew Grammar. 4. The Antiquities of the ancient Hebrews. 5. On the Mahometan Religion. These works are all written in Latin.

RELATION, the mutual respect of two things, or what each is with regard to the other. See METAPHYSICS, n° 93, &c. and 128, &c.

RELATION, in geometry. See RATIO.

RELATION, is also used for analogy. See ANALOGY, and METAPHYSICS, p. 529, &c.

RELATIVE, something relating to or respecting another.

RELATIVE, in music. See MODE.

RELATIVE-Terms, in logic, are words which imply relation: such are master and servant, husband and wife, &c.

In grammar, relative words are those which answer to some other word foregoing, called the *antecedent*; such are the relative pronouns *qui*, *quæ*, *quod*, &c. and in English, *who*, *whom*, *which*, &c. The word answering to these relatives is often understood, as, "I know whom you mean," for "I know the person whom you mean."

RELAXATION, in medicine, the act of loosening or slackening; or the loosening or slackness of the fibres, nerves, muscles, &c.

RELAY, a supply of horses, placed on the road, and appointed to be ready for a traveller to change, in order to make the greater expedition.

RELEASE, in law, is a discharge or conveyance of a man's right in lands or tenements, to another that

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hath

Rein-deer
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Release.

Release
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Relics.
Blackst.
Comment.

hath some former estate in possession. The words generally used therein are "remised, released, and for ever quit-claimed." And these releases may enure, either, 1. By way of *enlarging an estate*, or *enlarger l'estate*: as, if there be tenant for life or years, remainder to another in fee, and he in remainder releases all his right to the particular tenant and his heirs, this gives him the estate in fee. But in this case the releasor must be in *possession* of some estate, for the release to work upon; for if there be lessee for years, and, before he enters and is in possession, the lessor releases to him all his right in the reversion, such release is void for want of possession in the releasor. 2. By way of *passing an estate*, or *mutter l'estate*: as, when one of two coparceners releaseth all his right to the other, this passeth the fee-simple of the whole. And, in both these cases, there must be a privity of estate between the releasor and releasor; that is, one of their estates must be so related to the other, as to make but one and the same estate in law. 3. By way of *passing a right*, or *mutter le droit*: as if a man be disseised, and releaseth to his disseisor all his right; hereby the disseisor acquires a new right, which changes the quality of his estate, and renders that lawful which before was tortious. 4. By way of *extinguishment*: as if my tenant for life makes a lease to A for life, remainder to B and his heirs, and I release to A; this extinguishes my right to the reversion, and shall enure to the advantage of B's remainder as well as of A's particular estate. 5. By way of *entry and feoffment*: as if there be two joint disseisors, and the disseisor releases to one of them, he shall be sole seised, and shall keep out his former companion; which is the same in effect as if the disseisor had entered, and thereby put an end to the disseisin, and afterwards had enfeoffed one of the disseisors in fee. And hereupon we may observe, that when a man has in himself the possession of lands, he must at the common law convey the freehold by feoffment and livery; which makes a notoriety in the country: but if a man has only a right or a future interest, he may convey that right or interest by a mere release to him that is in possession of the land: for the occupancy of the releasor is a matter of sufficient notoriety already.

RELEVANCY, in Scots law. See LAW, N^o clxxxvi. 48.

RELICS, in the Romish church, the remains of the bodies or clothes of saints or martyrs, and the instruments by which they were put to death, devoutly preserved, in honour to their memory; kissed, revered, and carried in procession.

The respect which was justly due to the martyrs and teachers of the Christian faith, in a few ages increased almost to adoration; and at length adoration was really paid both to departed saints and to relics of holy men or holy things. The abuses of the church of Rome, with respect to relics, are very flagrant and notorious. For such was the rage for them at one time, that, as F. Mabillon a Benedictine justly complains, the altars were loaded with suspected relics; numerous spurious ones being everywhere offered to the piety and devotion of the faithful. He adds, too, that bones are often consecrated, which, so far from belonging to saints, probably do not belong to Christians. From the catacombs numerous relics have been taken, and yet it is

not known who were the persons interred therein. In the 11th century, relics were tried by fire, and those which did not consume were reckoned genuine, and the rest not. Relics were, and still are, preserved on the altars whereon mass is celebrated; a square hole being made in the middle of the altar, big enough to receive the hand, and herein is the relic deposited, being first wrapped in red silk, and inclosed in a leaden box.

The Romanists plead antiquity in behalf of relics: For the Manichees, out of hatred to the flesh, which they considered as an evil principle, refused to honour the relics of saints; which is reckoned a kind of proof that the Catholics did it in the first ages.

We know, indeed, that the touching of linen cloths on relics, from an opinion of some extraordinary virtue derived therefrom, was as ancient as the first ages, there being a hole made in the coffins of the 40 martyrs at Constantinople expressly for this purpose. The honouring the relics of saints, on which the church of Rome afterwards founded her superstitious and lucrative use of them, as objects of devotion, as a kind of charms or amulets, and as instruments of pretended miracles, appears to have originated in a very ancient custom, that prevailed among Christians, of assembling at the cemeteries or burying-places of the martyrs, for the purpose of commemorating them, and of performing divine worship. When the profession of Christianity obtained the protection of the civil government, under Constantine the Great, stately churches were erected over their sepulchres, and their names and memories were treated with every possible token of affection and respect. This reverence, however, gradually exceeded all reasonable bounds; and those prayers and religious services were thought to have a peculiar sanctity and virtue, which were performed over their tombs. Hence the practice which afterwards obtained, of depositing relics of saints and martyrs under the altars in all churches. This practice was then thought of such importance, that St Ambrose would not consecrate a church because it had no relics; and the council of Constantinople in Trullo ordained, that those altars should be demolished under which there were found no relics. The rage of procuring relics for this and other purposes of a similar nature, became so excessive, that in 386 the emperor Theodosius the Great was obliged to pass a law, forbidding the people to dig up the bodies of the martyrs, and to traffic in their relics.

Such was the origin of that respect for sacred relics, which afterwards was perverted into a formal worship of them, and became the occasion of innumerable processions, pilgrimages, and miracles, from which the church of Rome hath derived incredible advantage.— In the end of the ninth century, it was not sufficient to reverence departed saints, and to confide in their intercessions and succours, to clothe them with an imaginary power of healing diseases, working miracles, and delivering from all sorts of calamities and dangers; their bones, their clothes, the apparel and furniture they had possessed during their lives, the very ground which they had touched, or in which their putrified carcases were laid, were treated with a stupid veneration, and supposed to retain the marvellous virtue of healing all disorders both of body and mind, and of defending such as possessed them against all the assaults and devices of the devil.

Relics.

Relics. vil. The consequence of all this was, that every one was eager to provide himself with these salutary remedies; consequently, great numbers undertook fatiguing and perilous voyages, and subjected themselves to all sorts of hardships; while others made use of this delusion to accumulate their riches, and to impose upon the miserable multitude by the most impious and shocking inventions. As the demand for relics was prodigious and universal, the clergy employed the utmost dexterity to satisfy all demands, and were far from being nice in the methods they used for that end. The bodies of the saints were sought by fasting and prayer, instituted by the priest in order to obtain a divine answer and an infallible direction, and this pretended direction never failed to accomplish their desires; the holy carcass was always found, and that always in consequence, as they impiously gave out, of the suggestion and inspiration of God himself. Each discovery of this kind was attended with excessive demonstrations of joy, and animated the zeal of these devout seekers to enrich the church still more and more with this new kind of treasure. Many travelled with this view into the Eastern provinces, and frequented the places which Christ and his disciples had honoured with their presence, that, with the bones and other sacred remains of the first heralds of the gospel, they might comfort dejected minds, calm trembling consciences, save sinking states, and defend their inhabitants from all sorts of calamities. Nor did these pious travellers return home empty; the craft, dexterity, and knavery of the Greeks, found a rich prey in the stupid credulity of the Latin relic-hunters, and made a profitable commerce of this new devotion. The latter paid considerable sums for legs and arms, skulls and jaw-bones (several of which were Pagan, and some not human), and other things that were supposed to have belonged to the primitive worthies of the Christian church; and thus the Latin churches came to the possession of those celebrated relics of St Mark, St James, St Bartholomew, Cyprian, Pantaleon, and others, which they show at this day with so much ostentation. But there were many who, unable to procure for themselves these spiritual treasures by voyages and prayers, had recourse to violence and theft; for all sorts of means, and all sorts of attempts in a cause of this nature, were considered, when successful, as pious and acceptable to the Supreme Being.— Besides the arguments from antiquity to which the Papists refer, in vindication of their worship of relics, of which the reader may form some judgment from this article, Bellarmine appeals to Scripture in support of it, and cites the following passages, viz. Exod. xiii. 19.; Deut. xxxiv. 6.; 2 Kings xiii. 21.; 2 Kings xxiii. 16, 17, 18.; Isaiah xi. 10.; Matthew xi. 20, 21, 22.; Acts v. 12—15.; Acts xix. 11, 12. See **POPERY**.

The Roman Catholics in Great Britain do not acknowledge any worship to be due to relics, but merely a high veneration and respect, by which means they think they honour God, who, they say, has often wrought very extraordinary miracles by them. But, however proper this veneration and respect may be, its abuse has been so great and so general, as fully to warrant the rejection of them altogether.

Relics are forbidden to be used or brought into England by several statutes; and justices of peace are empowered to search houses for popish books and relics,

which, when found, are to be defaced and burnt, &c. 3 Jac. I. cap. 26.

RELICT, in law, the same with **WIDOW**.

RELIEF (*Relevamen*; but, in Domestday, *Relevatio*, *Relevium*), signifies a certain sum of money, which the tenant, holding by knight's service, grand serjeanty, or other tenure, (for which homage or legal service is due), and being at full age at the death of his ancestor, paid unto his lord at his entrance. See **PRIMER**.

Though reliefs had their original while feuds were only life-estates, yet they continued after feuds became hereditary; and were therefore looked upon, very justly, as one of the greatest grievances of tenure: especially when, at the first, they were merely arbitrary and at the will of the lord; so that, if he pleased to demand an exorbitant relief, it was in effect to disinherit the heir. The English ill brooked this consequence of their new-adopted policy; and therefore William the Conqueror by his laws *ascertained* the relief, by directing (in imitation of the Danish heriots), that a certain quantity of arms, and habiliments of war, should be paid by the earls, barons, and vavassours respectively; and, if the latter had no arms, they should pay 100s. William Rufus broke through this composition, and again demanded arbitrary uncertain reliefs, as due by the feudal laws; thereby in effect obliging every heir to new-purchase or *redeem* his land: but his brother Henry I. by the charter before-mentioned, restored his father's law; and ordained, that the relief to be paid should be according to the law so established, and not an arbitrary redemption.— But afterwards, when, by an ordinance in 27 Hen. II. called the *assise of arms*, it was provided, that every man's armour should descend to his heir, for defence of the realm, and it thereby became impracticable to pay these acknowledgments in arms according to the laws of the Conqueror, the composition was universally accepted of 100s. for every knight's fee, as we find it ever after established. But it must be remembered, that this relief was only then payable, if the heir at the death of his ancestor had attained his full age of 21 years.

To RELIEVE the GUARD, is to put fresh men upon guard, which is generally every 24 hours.

To RELIEVE the Trenches, is to relieve the guard of the trenches, by appointing those for that duty who have been there before.

To RELIEVE the Sentries, is to put fresh men upon that duty from the guard, which is generally done every two hours, by a corporal who attends the relief, to see that the proper orders are delivered to the soldier who relieves.

RELIEVO, or **RELIEF**, in sculpture, &c. is the projecture or standing out of a figure which arises prominent from the ground or plane on which it is formed; whether that figure be cut with the chissel, moulded, or cast.

There are three kinds or degrees of relievo, viz. alto, basso, and demi-relievo. The alto-relievo, called also *haut-relief*, or *high-relievo*, is when the figure is formed after nature, and projects as much as the life. Basso-relievo, bass-relief, or low-relievo, is when the work is raised a little from the ground, as in medals, and the frontispieces of buildings; and particularly in the histories,

Relief
||
Relievo.

Relievo,
Religion.

ries, festoons, foliages, and other ornaments of friezes. Demi-relievo is when one half of the figure rises from the plane. When, in a basso-relievo, there are parts that stand clear out, detached from the rest, the work is called a *demi-basso*.

In architecture, the relievo or projecture of the ornaments ought always to be proportioned to the magnitude of the building it adorns, and to the distance at which it is to be viewed.

RELIEVO, or *Relief*, in painting, is the degree of boldness with which the figures seem, at a due distance, to stand out from the ground of the painting.

The relievo depends much upon the depth of the shadow, and the strength of the light; or on the height of the different colours, bordering on one another; and particularly on the difference of the colour of the figure from that of the ground: thus, when the light is so disposed as to make the nearest parts of the figure advance, and is well diffused on the masses, yet insensibly diminishing, and terminating in a large spacious shadow, brought off insensibly, the relievo is said to be bold, and the clair obscure well understood.

*De Natura
Deorum.

lib. 2. § 28.

Religion
defined;

RELIGION (*RELIGIO*), is a Latin word derived, according to Cicero*, from *relegere*, "to re-consider;" but according to Servius and most modern grammarians, from *religare*, "to bind fast." The reason assigned by the Roman orator for deducing *religio* from *relego*, is in these words, "qui autem omnia, quæ ad cultum deorum pertinerent, diligenter retractarent, et tanquam relegerent, sunt dicti religiosi ex relegendo." The reason given by Servius for his derivation of the word is, "quod mentem religio religet." If the Ciceronian etymology be the true one, the word *religion* will denote the diligent study of whatever pertains to the worship of the gods; but according to the other derivation, which we are inclined to prefer, it denotes that obligation which we feel on our minds from the relation in which we stand to some superior power. In either case, the import of the word *religion* is different from that of *theology*, as the former signifies a number of practical duties, and the latter a system of speculative truths. *Theology* is therefore the foundation of *religion*, or the science from which it springs; for no man can study what pertains to the worship of superior powers till he believe that such powers exist, or feel any obligation on his mind from a relation of which he knows nothing.

2
And distin-
guished
from theo-
logy,

This idea of religion, as distinguished from theology, comprehends the duties not only of those more refined and complicated systems of theism or polytheism which have prevailed among civilized and enlightened nations, such as the polytheism of the Greeks and Romans, and the theism of the Jews, the Mahometans, and the Christians; it comprehends every sentiment of obligation which human beings have ever conceived themselves under to superior powers, as well as all the forms of worship which have ever been practised through the world, however fantastic, immoral, or absurd.

3
It is an im-
portant sub-
ject of spe-
culation.

When we turn our eyes to this feature of the human character, we find it peculiarly interesting. Mankind are distinguished from the brutal tribes, and elevated to an higher rank, by the rational and moral faculties with which they are endowed; but they are still more widely distinguished from the inferior creation, and more high-

ly exalted above them, by being made capable of religious notions and religious sentiments. The slightest knowledge of history is sufficient to inform us, that religion has ever had a powerful influence in moulding the sentiments and manners of men. It has sometimes dignified, and sometimes degraded, the human character. In one region or age it has been favourable to civilization and refinement; in another, it has occasionally cramped the genius, depraved the morals, and deformed the manners of men. The varieties of religion are innumerable; and the members of every distinct sect must view all who differ from them as more or less mistaken with respect to the most important concerns of man. Religion seems to be congenial to the heart of man; for wherever human society subsists, there we are certain of finding religious opinions and sentiments.

It must, therefore, be an important subject of speculation to the man and the philosopher to consider the origin of religion; to inquire, How far religion in general has a tendency to promote or to injure the order and happiness of society? and, above all, to examine, What particular religion is best calculated to produce an happy influence on human life?

4
Three ques-
tions con-
cerning re-
ligion.

We shall endeavour to give a satisfactory answer to each of these questions, reserving to the article THEOLOGY the consideration of the dogmas of that particular religion which, from our present inquiries, shall appear to be true, and to have the happiest influence on human life and manners.

I. The foundation of all religion rests on the belief of the existence of one or more superior beings, who govern the world, and upon whom the happiness or misery of mankind ultimately depends. Of this belief, as it may be said to have been universal, there seem to be but three sources that can be conceived. Either the image of Deity must be stamped on the mind of every human being, the savage as well as the sage; or the founders of societies, and other eminent persons, tracing by the efforts of their own reason visible effects to invisible causes, must have discovered the existence of superior powers, and communicated the discovery to their associates and followers; or, lastly, the universal belief in such powers must have been derived by tradition from a primæval revelation, communicated to the progenitors of the human race.

5
Of the
source or
foundation
of religion.

One or other of these hypotheses must be true, because a fourth cannot be framed. But we have elsewhere (POLYTHEISM, n^o 2.) examined the reasoning which has been employed to establish the first, and shewn that it proceeds upon false notions of human nature. We should likewise pronounce it contrary to fact, could we believe, on the authority of some of its patrons, who are not ashamed to contradict one another, that the Kamtschatkans, and other tribes, in the lowest state of reasoning and morals, have no ideas whatever of Deity. We proceed, therefore, to consider the second hypothesis, which is much more plausible, and will bear a stricter scrutiny.

6
It does not
arise from
an original
stamp on
the mind;

That the existence and many of the attributes of the Deity are capable of rigid demonstration, is a truth which cannot be controverted either by the philosopher or the Christian; for "the invisible things of Him from the creation of the world are clearly seen, being understood by the things that are made, even His eternal power and Godhead," (see METAPHYSICS, Part III. chap.

Nor from
reasoning;

Religion. chap. vi. and THEOLOGY, n° 8, 9.) But surely it would be rash to infer, either that every truth for which, when it is known, the ingenuity of man can frame a demonstration, is therefore *discoverable* by human sagacity, or that all the truths which have been discovered by a *Newton* or a *Locke* might therefore have been discovered by untaught barbarians. In mathematical science, there are few demonstrations of easier comprehension than that given by Euclid, of the theorem of which Pythagoras is the reputed author; yet no man ever dreamed that a boy capable of being made to understand that theorem, must therefore have sagacity equal to the sage of Samos; or that such a boy, having never heard of the relation between the hypotenuse and other two sides of a right angled triangle, would be likely to *discover* that the square of the former is precisely equal to the sum of the squares of the latter. Just so it seems to be with the fundamental truths of theology. There can hardly be conceived a demonstration less intricate, or more conclusive, than that which the man of science employs to prove the existence of at least one God, possessed of boundless power and perfect wisdom. And could we suppose that the human race had remained without any knowledge of God in the world, till certain lucky individuals had by some means or other made themselves masters of the rules of logic, and the philosophy of causes, there can be no doubt but that these individuals might have discovered the existence of superior powers, and communicated their discovery to their associates and followers. But this supposition cannot be admitted, as it is contradicted by the evidence of all history. No nation or tribe has ever been found, in which there is not reason to believe that some notions were entertained of superior and invisible powers, upon which depends the happiness or misery of mankind; and from the most authentic records of antiquity, it is apparent that very pure principles of theism prevailed in some nations long before the rules of logic, and the philosophy of causes, were thought of by any people under heaven.

The supposition before us is inadmissible upon other accounts. Some modern philosophers have fancied that the original progenitors of mankind were left entirely to themselves from the moment of their creation; that they wandered about for ages without the use of speech and in the lowest state of savagism; but that they gradually civilized themselves, and at last stumbled upon the contrivance of making articulate sounds significant of ideas, which was followed by the invention of arts and sciences, with all the blessings of religion and legislation in their train. But this is a wild reverie, inconsistent with the phenomena of human nature.

It is a well known fact, that a man blind from his birth, and suddenly made to see, would not by means of his newly acquired sense discern either the magnitude or figure or distance of objects, but would conceive every thing which communicated to him visible sensations as inseparably united to his eye or his mind (See METAPHYSICS, n° 49—53). How long his sense of sight would remain in such an imperfect state, we cannot positively say; but from attending to the visible sensations of infants, we are confident that weeks, if not months, elapse before they can distinguish one thing from another. We have indeed been told, that Cheselden's famous patient, though he was at first in the state which

we have described, learned to distinguish objects by sight in the course of a few hours, or at the most of a few days; but admitting this to a certain extent to be true, it may easily be accounted for. The disease called a *cataract* seldom occasions total blindness; but let us suppose the eyes of this man to have been so completely dimmed as to communicate no sensation whatever upon being exposed to the rays of light; still we must remember that he had long possessed the power of loco-motion and all his other senses in perfection. He was therefore well acquainted with the real, *i. e.* the tangible magnitude, figure, and distance of many objects; and having been often told that the things which he touched would, upon his acquisition of sight, communicate new sensations to his mind, differing from each other according to the distance, figure, and magnitude of the objects by which they were occasioned, he would soon learn to infer the one from the other, and to distinguish near objects by means of his sight.

The progenitors of the human race, however, if left to themselves from the moment of their creation, had not the same advantages. When they first opened their eyes, they had neither moved, nor handled, nor heard, nor smelled, nor tasted, nor had a single idea or notion treasured up in their memories; but were in all these respects in the state of new-born infants. Now we should be glad to be informed by those sages who have conducted mankind through many generations in which they were *mutum et turpe pecus* to that happy period when they invented language, how the first men were taught to distinguish objects by their sense of sight, and how they contrived to *live* till this most necessary faculty was acquired? It does not appear that men are like brutes, provided with a number of instincts which guide them blindfold and without experience to whatever is necessary for their own preservation (see INSTINCT): On the contrary, all voyagers tell us that, in strange and uninhabited countries, they dare not venture to taste unknown fruits unless they perceive that these fruits are eaten by the fowls of the air. But without the aid of instinct, or of some other guide equally to be depended upon, it is not in our power to conceive how men dropt from the hands of their Creator, and left from that instant wholly to themselves, could move a single step without the most imminent danger, or even stretch out their hands to lay hold of that food which we may suppose to have been placed within their reach. They could not, for many days, distinguish a precipice from a plane, a rock from a pit, or a river from the meadows through which it rolled. And in such circumstances, how could they possibly exist, till their sense of sight had acquired such perfection as to be a sufficient guide to all their necessary motions? Can any consistent theist suppose that the God whose goodness is so conspicuously displayed in all his works, would leave his noblest creature on earth, a creature for whose comfort alone many other creatures seem to have been formed, in a situation so forlorn as this, where his immediate destruction appears to be inevitable? No! This supposition cannot be formed, because mankind still exist.

Will it then be said, that when God formed the first men, he not only gave them organs of sensation, and souls capable of arriving by discipline at the exercise of reason, but that he also impressed upon their minds adequate

But from
an original
revelation.

Religion. adequate ideas and notions of every object in which they were interested, brought all their organs, external and internal, at once to their utmost possible state of perfection; taught them instantaneously the laws of reasoning; and, in one word, stored their minds with every branch of useful knowledge? This is indeed our own opinion; and it is perfectly agreeable to what we are taught by the Hebrew lawgiver. When God had formed Adam and Eve, Moses does not say that he left them to acquire by slow degrees the use of their senses and reasoning powers, and to distinguish as they could fruits that were salutary from those that were poisonous. No: he placed them in a garden where every tree but one bore fruit fit for food; he warned them particularly against the fruit of that tree; he brought before them the various animals which roamed through the garden; he arranged these animals into their proper genera and species; and by teaching Adam to give them names, he communicated to the first pair the elements of language. This condescension appears in every respect worthy of perfect benevolence; and indeed without it the helpless man and woman could not have lived one whole week. But it cannot be supposed, that amidst so much useful instruction the gracious Creator would neglect to communicate to his rational creatures the knowledge of himself; to inform them of their own origin, and the relation in which they stood to him; and to state in the plainest terms the duties incumbent on them in return for so much goodness.

9
This opinion agreeable to the writings of Moses.

10
The mode of communication not certainly known.

In what manner all this knowledge was communicated, cannot be certainly known. It may have been in either of the following ways conceivable by us, or in others of which we can form no conception. God may have miraculously stored the minds of the first pair with adequate ideas and notions of sensible and intellectual objects; and then by an internal operation of his own Spirit have enabled them to exert at once their rational faculties so as to discover his existence and attributes, together with the relation in which as creatures they stood to him their Almighty Creator. Or, after rendering them capable of distinguishing objects by means of their senses, of comparing their ideas, and understanding a language, he may have exhibited himself under some sensible emblem, and conducted them by degrees from one branch of knowledge to another, as a school-master conducts his pupils, till they were sufficiently acquainted with every thing relating to their own happiness and duty as rational, moral, and religious, creatures. In determining the question before us, it is of no importance whether infinite wisdom adopted either of these methods, or some other different from them, both which we cannot conceive. The ordinary process in which men acquire knowledge is, by the laws of their nature, extremely tedious. They cannot reason before their minds be stored with ideas and notions; and they cannot acquire these but through the medium of their senses long exercised on external objects.

11
But whether internal or external, it was equally a revelation.

The progenitors of the human race, left to inform themselves by this process, must have inevitably perished before they had acquired one distinct notion; and it is the same thing with respect to the origin of religion, whether God preserved them from destruction by an internal or external revelation. If he stored their minds at once with the rudiments of all useful knowledge, and

Religion. rendered them capable of exerting their rational faculties, so as, by tracing effects to their causes, to discover his being and attributes, he revealed himself to them as certainly as he did afterwards to Moses, when to him he condescended to speak face to face.

12
Such a revelation must naturally be handed to posterity.

If this reasoning be admitted as fair and conclusive, and we apprehend that the principles on which it proceeds cannot be considered as ill-founded, we have advanced so far as to prove that mankind must have been originally enlightened by a revelation. But it is scarce necessary to observe, that this revelation must have been handed down through succeeding generations. It could not fail to reach the era of the deluge. It is not absurd to suppose, that he who spake from heaven to Adam, spake also to Noah. And both the revelation which had been handed down to the postdeluvian patriarch by tradition, and that which was communicated immediately to himself, would be by him made known to his descendants. Thus it appears almost impossible that some part of the religious sentiments of mankind should not have been derived from revelation; and that not of the religious sentiments of one particular family or tribe, but of almost all the nations of the earth.

13
The authority of the Jewish and Christian scriptures, &c.

This conclusion, which we have deduced by fair reasoning from the benevolence of God and the nature of man, is confirmed by the authority of the Jewish and Christian Scriptures, which are entitled to more implicit credit than all the other records of ancient history.

When we review the internal and external evidence of the authenticity of these sacred books, we cannot for a moment hesitate to receive them as the genuine word of God. If we examine their internal character, they everywhere appear to be indeed the voice of Heaven. The creation of the world—the manner in which this globe was first peopled—the deluge which swept away its inhabitants—the succeeding views of the state of mankind in the next ages after the deluge—the calling of Abraham—the legislation of Moses—the whole series of events which beset the Jewish nation—the prophecies—the appearance of Jesus Christ, and the promulgation of his gospel, as explained to us in the Scriptures—form one series, which is, in the highest degree, illustrative of the power, wisdom, and goodness of the Supreme Being.

While it must be allowed that the human mind is ever prone to debase the sublime principles of true religion by enthusiasm and superstition, reason and candour will not for a moment hesitate to acknowledge, that the whole system of revelation represents the Supreme Being in the most sublime and amiable light: that, in it, religion appears essentially connected with morality: that the legislative code of Moses was such as no legislator ever formed and established among a people equally rude and uncultivated; that the manners and morals of the Jews, vicious and savage as they may in some instances appear, yet merit a much higher character than those either of their neighbours, or of almost any other nation, whose circumstances and character were in other respects similar to theirs: that there is an infinite difference between the Scripture prophecies and the oracles and predictions which prevailed among heathen nations: and that the miracles recorded in those writings which we esteem sacred were attended with circumstances which entitle them to be ranked in a very different

Religion. different class from those which enthusiasm and imposture have fabricated among other nations. See MIRACLE and PROPHECY.

14
The five books of Moses proved to be divine.

But as the evidence of the divine origin of the primordial religion rests particularly on the authority of the first five books of the Old Testament, it may be thought incumbent on us to support our reasoning on this subject, by proving, that the author of those books was indeed inspired by God. This we shall endeavour to do by one decisive argument; for the nature of the article, and the limits prescribed us, admit not of our entering into a minute detail of all that has been written on the divine legation of Moses.

If the miracles recorded in the book of Exodus, and the other writings of the Hebrew lawgiver, were really performed; if the first-born of the Egyptians were all cut off in one night, as is there related; and if the children of Israel passed through the Red sea, the waters being divided, and forming a wall on their right hand and on their left—it must necessarily be granted, that Moses was sent by God; because nothing less than a divine power was sufficient to perform such wonderful works. But he who supposes that those works were never performed, must affirm that the books recording them were *forged*, either at the era in which the miracles are said to have been wrought, or at some subsequent era: There is no other alternative.

15
For it was otherwise impossible to impose them on the Jews in the era to which they relate, or

That they could not be *forged* at the era in which they affirm the miracles to have been wrought, a very few reflections will make incontrovertibly evident. These books inform the people for whose use they were written, that their author, after having inflicted various plagues upon Pharaoh and his subjects, brought them, to the number of 600,000, out of Egypt with a high hand; that they were led by a pillar of cloud through the day, and by a pillar of fire through the night, to the brink of the Red sea, where they were almost overtaken by the Egyptians, who had pursued them with chariots and horses; that, to make a way for their escape, Moses stretched out his rod over the sea, which was immediately divided, and permitted them to pass through on dry ground, between two walls of water; and that the Egyptians, pursuing and going in after them to the midst of the sea, were all drowned by the return of the waters to their usual state, as soon as the Hebrews arrived at the further shore. Is it possible now that Moses or any other man could have persuaded 600,000 persons, however barbarous and illiterate we suppose them, that they had been witnesses of all these wonderful works, if no such works had been performed? Could any art or eloquence persuade all the inhabitants of Edinburgh and Leith, that they had yesterday walked on dry ground through the Frith to Kinghorn, the waters being divided and forming a wall on their right hand and on their left? If this question must be answered in the negative, it is absolutely impossible that the books of Moses, supposing them to have been forged, could have been received by the people who were alive when those wonders are said to have been wrought.

16
In any after period.

Let us now inquire, whether, if they be forgeries, they could have been received as authentic at any subsequent period; and we shall soon find this supposition as impossible as the former. The books claiming Moses for their author speak of themselves as delivered by him, and from his days kept in the ark of the covenant*; and

*Deut. xxxi. 24-27.

ark which, upon this supposition, had no existence prior to the forgery. They speak of themselves likewise, not only as a history of miracles wrought by their author, but as the statutes or municipal law of the nation, of which a copy was to be always in the possession of the priests, and another in that of the supreme magistrate†. Now, in whatever age we suppose these books to have been forged, they could not possibly be received as authentic; because no copy of them could then be found either with the king, with the priests, or in the ark, though, as they contain the statute law of the land, it is not conceivable that, if they had existed, they could have been kept secret. Could any man, at this day, forge a book of statutes for England or Scotland, and make it pass upon these nations for the only book of statutes which they had ever known? Was there ever since the world began a book of sham statutes, and these, too, multifarious and burdensome, imposed upon any people as the only statutes by which they and their fathers had been governed for ages? Such a forgery is evidently impossible.

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†Deut.

xviii. 19.

But the books of Moses have internal proofs of authenticity, which no other books of ancient statutes ever had. They not only contain the laws, but also give an historical account of their enactment, and the reasons upon which they were founded. Thus they tell us, that the rite of circumcision was instituted as a mark of the covenant between God and the founder of the Jewish nation, and that the practice of it was enforced by the declaration of the Almighty, that every uncircumcised man-child should be cut off from his people. They inform us that the annual solemnity of the passover was instituted in commemoration of their deliverance when God slew, in one night, all the first-born of the Egyptians; that the first-born of Israel, both of men and beast, were on the same occasion dedicated for ever to God, who took the Levites instead of the first-born of the men‡; that this tribe was consecrated as priests, by whose hands alone the sacrifices of the people were to be offered; that it was death for any person of a different tribe to approach the altar, or even to touch the ark of the covenant; and that Aaron's budding rod was kept in the ark in memory of the wonderful destruction of Korah, Dathan, and Abiram, for their rebellion against the priesthood.

§ Gen. xviii.

‡Exod. xxi.

and Numb.

viii.

Is it possible now, if all these things had not been practised among the Hebrews from the era of Moses, with a retrospect to the signal mercies which they are said to commemorate, that any man or body of men could have persuaded a whole nation, by means of forged books, that they had always religiously observed such institutions? Could it have been possible, at any period posterior to the Exodus, to persuade the Israelites that they and their fathers had all been circumcised on the eighth day from their birth, if they had been conscious themselves that they had never been circumcised at all? or that the passover was kept in memory of their deliverance from Egyptian bondage, if no such festival was known among them?

But let us suppose that circumcision had been practised, and all their other rites and ceremonies observed from time immemorial, without their knowing any reason of such institutions; still it must be confessed that the forger of these books, if they were forged, constructed his narrative in such a manner as that no man

of

Religion. of common sense could receive it as authentic. He says it was death to touch the ark! As such an assertion was never heard of before, and as the ritual he was endeavouring to make them esteem sacred was oppressively multifarious; surely some daring spirit would have ventured to put his veracity to the test by moving the ark and even offering sacrifices; and such a test would at once have exposed the imposture. The budding rod, too, and the hat of manna, which, though long preserved, were never before heard of, must have produced inquiries that could not fail to end in detection. These books speak likewise of weekly sabbaths, daily sacrifices, a yearly expiation, and monthly festivals, all to be kept in remembrance of great things particularly specified as done for the nation at an early period of its existence. If this was not the case, could the forger of the books have persuaded the people that it really was so? The enlightened reasoners of this nation would be offended were we to compare them with the ancient Israelites; but surely they will not say that we are partial to that people, if we bring them to a level with the most savage tribes of the Russian empire, who profess Christianity? Now, were a book to be forged containing an account of many strange things done a thousand years ago in Siberia by an *Apollonius*, or any other philosopher or hero, numbers of the barbarians inhabiting that country would, we doubt not, give implicit credit to the *legend*: But were the author, in confirmation of his narrative, to affirm, that all the Siberians had from that day to this kept sacred the first day of the week in memory of his hero; that they had all been baptized or circumcised in his name; that in their public judicatories they had sworn by his name, and upon that very book which they had never seen before; and that the very same book was their law and their gospel, by which for a thousand years back the actions of the whole people had been regulated—surely the grossest savage among them would reject with contempt and indignation a forgery so palpable.

If this reasoning be conclusive, the books of Moses must indubitably be authentic, and he himself must have been inspired by the spirit of God. But this point being established, the question respecting the origin of the primæval religion is completely answered. The writer of the book of Genesis informs us, that Adam and Noah received many revelations from the Author of their being, and that their religion was founded on the principles of the purest theism. How it degenerated among the greater part of their descendants into the grossest idolatry, has been shown at large in another place. See POLYTHEISM.

17
Of the influence of religion on society.

II. Having thus answered the first question proposed for discussion in the present article, we now proceed to consider the second, and to inquire whether and how far religious sentiments have a tendency to injure or to promote the welfare of society? This is a subject of the utmost importance; and if we prove successful in our inquiries, we shall be enabled to determine whether the governors of mankind ought carefully to support religious establishments, or whether the philosopher who calls himself a citizen of the world, and professes to feel the most eager desire to promote the interests of his species, acts consistently when he labours to exterminate religion from among men.

*M. Nec-
her.

A celebrated French financier*, a man of abilities

and virtue, who has published a book on the importance of religious opinions, labours to show that religious establishments are indispensably necessary for the maintenance of civil order, and demonstrates how weak the influence of political institutions is on the morals of mankind; but he refuses to review the history of past ages in order to discover how far religious opinions have actually been injurious or beneficial to the welfare of society; choosing rather to content himself with the result of a series of metaphysical disquisitions.

We admire the spirit which induced a man who had spent a considerable part of his life amid the hurry of public business, to become the strenuous advocate of religion; but we cannot help thinking that, notwithstanding the eloquence, the acuteness, and the knowledge of mankind which he has displayed, his refusing to admit the evidence of facts concerning the influence of religion on society may possibly be regarded by its enemies as a tacit acknowledgment that the evidence of facts would be unfavourable to the cause which he wishes to defend. The fallacy of general reasonings, and the inutility of metaphysics for the purposes of life, are so universally acknowledged, that they have long been the theme of declamation. Though the abuses of religion, as well as the abuses of reason, the perversion of any of the principles of the human mind, and the misapplication of the gifts of providence, may have often produced effects hurtful to the virtue and the happiness of mankind; yet, after tracing religion to a divine origin, we cannot, for a moment, allow ourselves to think that the primary tendency of religion must be hostile to the interests of society, or that it is necessary to view it abstractly in order that we may not behold it in an odious light. Often has the sceptic attacked religion with artful malice; but perhaps none of his attacks has been so skilfully directed as that which has first ridiculed the absurdity of the most absurd superstitions, and afterwards laboured to prove that the most absurd system of polytheism is more favourable to the interests of society than the purest and most sublime theism. Instances in which the abuse of religion had tended to deprave the human heart, and had led to the most shocking crimes, have been assiduously collected, and displayed in all the aggravating colours in which eloquence could array them, till at length even the friends of true religion have been abashed; and it has become a fashionable opinion, that nothing but self-interest or bigotry can prompt men to represent religion as the friend of civil order. But let us try if, by a candid consideration of what effects have resulted to society from religious principles, in general, without comparing these with regard to truth or falsehood, we can advance any thing to vindicate the character of religion.

Notions of Deity in general, of various orders of divinities, of their moral character, of their influence on human life, of a future state, and of the immortality of the human soul, constitute the leading articles of religion. Let us view these together with the rites to which they have given rise; and we may perhaps be enabled to form some well-grounded notions on this important point.

1. Having proved that the first religious principles entertained by men were derived from revelation, it is impossible to suppose that they could produce effects injurious to society.

18
Triumphs of the sceptic on account of the abuses of religion.

19
The first religious opinions entertained by men could not possibly be injurious to society.

Religion. ²⁰
 The effect of atheism on the manners of nations

jurious to society. If religion of any kind has ever lessened the virtue or disturbed the peace of men, it must have been that religion which springs from a belief in a multitude of superior powers actuated by passions, and of whom some were conceived as benevolent and others as malicious beings. That such sentiments should have produced vices unknown in societies where pure theism is professed, will be readily admitted. Even the few *atheists* who live in Christian or Mahometan countries are restrained by the laws, by a desire to promote the honour of the sect, and by many other considerations, from indulging in practices which the example of the false gods of antiquity sanctioned in their votaries. But in determining the present question, we must not compare the virtues of the pagan world with those of individual atheists in modern Europe, but with those of *nations* professing atheism; and such nations are nowhere to be found. We can however easily conceive, that in a society unawed by any notions of God or a future state, no such laws would be enacted as those which restrain the sensual appetites; of which the criminal indulgence was one of the greatest stigmas on the pagan worship of antiquity. In such societies, therefore, those vices would be practised constantly to which paganism gave only an occasional sanction; and many others, in spite of the utmost vigilance of human laws, would be perpetrated in secret, which the most profligate pagans viewed with horror. Conscience, though acting with all her energy, would not be able to command any regard to the laws of morality: No virtue would be known; social order would be nowhere observed; the midnight assassin would everywhere be found; and in the general scramble mankind would be exterminated from the face of the earth.

21

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Would be
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The worst species of paganism, even that which prevails among savages who worship evil spirits, affords greater security than this. It is indeed shocking to think that demons should be worshipped, while deities, who are regarded as being all benevolence, are treated with contempt: And it has been asked, If the influence of such religious sentiments on the moral practice of the idolaters must not naturally be, to cause them to treat their friends and benefactors with ingratitude, and to humble themselves with mean submission before a powerful enemy?

They do not appear to have produced such effects on the morality of the savages by whom they were entertained. The benevolent deities were neglected, only because their benevolence was necessary. A voluntary favour merits a grateful return: a designed injury provokes resentment. But when you become, by accident, the instrument of any man's good fortune, the world will scarce consider him as owing you any obligation: the stone which bruises your foot excites only a momentary emotion of resentment. Those gods who could not avoid doing good to men might not receive a profusion of thanks for their services; and yet a favour conferred by an human benefactor commands the warmest gratitude. But those rude tribes appear to have had so much wisdom as to confer a less absolute malice on their malevolent deities, than the benevolence which they attributed to their more amiable order of superior beings: though the latter could not possibly do them any thing but good, and that constantly; yet the former were not under an equally indispensable necessity of

persevering in depressing them under calamities. On their malevolent deities they conferred a freedom of agency which they denied to the benevolent. No wonder, then, that they were more assiduous in paying their court to the one than to the other. They might with as much propriety have thought of being grateful to the boar or stag whose flesh supported them, as to deities who were always benevolent, because they could not possibly be otherwise. Though negligent of such deities, this can scarce be thought to have had any tendency to render them ungrateful to benefactors like themselves. And yet, it must not be dissembled, that the American Indians, among whom such religious sentiments have been found to prevail, are said to be very little sensible to the emotions of gratitude. An Indian receives a present without thinking of making any grateful acknowledgments to the bestower. He pleases his fancy or gratifies his appetite with what you have given, without seeming to consider himself as under the smallest obligation to you for the gift.

It may be doubted, however, whether this spirit of ingratitude originates from, or is only collateral with, that indifference which refuses adoration and worship to the benevolent divinities. If the former be actually the case, we must acknowledge that those religious notions which we now consider, though preferable to general atheism, are in this respect unfriendly to virtue. But if the Indians may be thought to owe the ingratitude for which they are distinguished to the opinion which they entertain of the existence of a benevolent order of deities, whose benevolence is necessary and involuntary, their ideas of the nature of their malevolent demons do not appear to have produced equal effects on their moral sentiments. However submissive to those dreaded beings, they are far from showing the same tame and cowardly submission to their human enemies: towards them they seem rather to adopt the sentiments of their demons. Inveterate rancour and brutal fury, inhuman cruelty and inconceivable cunning, are displayed in the hostilities of tribes at war; and we know not, after all, if even these sentiments do not owe somewhat of their force to the influence of religion.

Yet let us remember that these same Indians have not been always represented in so unamiable a light ; or, at least, other qualities have been ascribed to them which seem to be inconsistent with those barbarous dispositions. They have been described as peculiarly susceptible of conjugal and parental love ; and he who is so cannot be destitute of virtue.

2. But leaving the religion of savages, of which very little is known with certainty, let us proceed to examine what is the natural influence of that mixed system of theology which represents to the imagination of men a number of superior and inferior divinities, actuated by the same passions and feelings with themselves, and often making use of their superior power and knowledge for no other purpose but to enable them to violate the laws of moral order with impunity. This is the celebrated polytheism of the Greeks and Romans, and most other nations of antiquity (see POLYTHEISM). Could its influence be favourable to virtue?

At a first view every person will readily declare, that ^{apparently} such a system must have been friendly to profligacy. If ^{friendly to} you commit the government of the universe, and the ^{profligacy;} inspection of human society, to a set of beings who are
I often

Religion, often disposed to regard vice with a no less favourable eye than virtue, and who, though there be an established order by which virtue is discriminated from vice, and right from wrong, yet scruple not to violate that order in their own conduct; you cannot expect them to require in you a degree of rectitude of which they themselves appear incapable. A Mercury will not discourage the thievish arts of the trader; a Bacchus and a Venus cannot frown upon debauchery; Mars will behold with savage delight all the cruelties of war. The Thracians indeed, one of the most barbarous nations of antiquity, whose ferocity was little if at all inferior to that of the Indians who have been distinguished as cannibals, was the favourite nation of Mars; among whom stood his palace, to which he repaired when about to mount his chariot, and arm himself for battle. Even Jupiter, who had been guilty of so many acts of tyrannical caprice, had been engaged in such a multitude of amorous intrigues, and seemed to owe his elevated station as monarch of the sky, not to superior goodness or wisdom, but merely to a superior degree of brutal force, could not be feared as the avenger of crimes, or revered as the impartial rewarder of virtues.

23
But when contrasted with atheism, it was not without its favourable effects. It was so connected with the order of society, that, without its support, that order could scarce have been maintained. The young rake might perhaps justify himself by the example of Jupiter, or Apollo, or some other amorous divinity; the frail virgin or matron might complain of Cupid, or boast of imitating Venus; and the thief might practise his craft under the patronage of Mercury: But if we take the whole system together, if we consider with what views those deities were publicly worshipped, what temples were raised, what rites instituted, what sacrifices offered, and what *feriae* consecrated; we shall perhaps find it necessary to acknowledge that the general effects even of that mixed and incoherent system of polytheism which prevailed among the Greeks and Romans were favourable to society. To state a particular instance; the *ancilia* of Mars and the fire of Vesta were thought to secure the perpetuity of the Roman empire. As long as the sacred *ancile*, which had been dropped from heaven for that benevolent purpose, was safely preserved in those holy archives in which it had been deposited; and as long as the sacred fire of Vesta was kept burning, without being once extinguished, or at least suffered to remain for an instant in that state; so long was Rome to subsist and flourish. And, however simple and absurd the idea which connected the prosperity of a nation with the preservation of a piece of wood in a certain place, or with the constant blazing of a flame upon an hearth; yet no fact can be more certain, than that the patriotism and enthusiastic valour of the Romans, which we so much extol and admire, were, in many instances, owing in no inconsiderable degree to the veneration which they entertained for the *ancilia* and the vestal fire.

23
As is proved by a numerous series of facts, &c.

A numerous series of facts occur in the Roman history, which show the happy effects of their religious opinions and ceremonies on their sentiments concerning social order and the public welfare. How powerful

Religion, was the influence of the *sacramentum* administered to the soldiers when they enlisted in the service of their country? The promises made, the idea of the powers invoked, and the rites performed on that occasion, produced so deep and so awful an impression on their minds, that no danger, nor distress, nor discontent, could prompt them to violate their engagements. The responses of the oracles, too, though the dictates of deceit and imposture, were often of singular service to those to whom they were uttered; when they inspired the warrior, as he marched out to battle, with the confidence of success, they communicated to him new vigour, and more heroic valour, by which he was actually enabled to gain, or at least to deserve, the success which they promised. Again, when in times of public distress, the augur and the priest directed some games to be celebrated, certain sacrifices to be offered, or some other solemnities to be performed, in order to appease the wrath of the offended deities; it is plain that the means were not at all suited to accomplish the end proposed by them; yet still they were highly beneficial. When the attention of the whole people was turned entirely to those solemnities by which the wrath of heaven was to be averted, they were roused from that despondency under which the sense of the public distress or danger might have otherwise caused them to sink: the public union was at the same time more closely cemented, and the hearts of the people knit together; and when persuaded, that by propitiating the gods they had removed the cause of their distress, they acquired such calmness and strength of mind as enabled them to take more direct and proper measures for the safety of the state.

Could we view the ancient Greeks and Romans acting in public or in private life under the influence of that system of superstition which prevailed among them; could we perceive how much it contributed to the maintenance of civil order; could we behold Numa and Lycurgus establishing their laws, which would otherwise have met with a very different reception under the sanction of divinities; could we observe all the beneficial effects which arose to communities from the celebration of religious ceremonies - we should no longer hesitate to acknowledge, that those principles in the human heart by which we are susceptible of religious sentiments, are so eminently calculated to promote the happiness of mankind, that even when perverted and abused, their influence is still favourable.

25
The ideas which prevailed among the nations of the heathen world concerning a future state of retribution were, it must be confessed, not very correct. Some of the poets, we believe, have represented them in no unfair light: both Homer and Virgil have conducted their heroes through the realms of Pluto, and have taken occasion to unfold to us the secrets of those dreary abodes. The scenes are wild and fanciful; the rewards of the just and virtuous are of no very refined or dignified nature: and of the punishments inflicted on the guilty, it is often hard to say for what ends they could be inflicted; whether to correct and improve, or for the gratification of revenge or whim: they are often so whimsical and unsuitable, that they cannot with any degree of propriety be ascribed to any cause but blind chance or wanton caprice. A great dog with three tongues, a peevish old boat-man with a leaky ferry-boat, demanding

25
Their notion of a future state a retribution incor-

Religion. manding his freight in a surly tone, and an uxorious monarch, are objects too familiar and ludicrous not to degrade the dignity of those awful scenes which are represented as the mansions of the dead, and to prevent them from making a deep enough impression on the imagination. The actions and qualities, too, for which departed spirits were admitted into Elysium, or doomed to the regions of suffering, were not always of such a nature as under a well-regulated government on earth would have been thought to merit reward, or to be worthy of punishment. It was not always virtue or wisdom which conducted to the Elysian fields, or gained admission into the society of the immortal gods.—Ganymede was for a very different reason promoted to be the cup-bearer of Jove; and Hercules and Bacchus could not surely plead that any merits of that kind entitled them to seats in the council, and at the banquets of the immortals. That doctrine, likewise, which represented mortals as hurried by fate to the commission of crimes, which they could no more abstain from committing than the sword can avoid to obey the impulse of a powerful and furious arm plunging it into the breast of an unresisting antagonist, could not but produce effects unfavourable to virtue; and it afforded a ready excuse for the most extravagant crimes.

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But never-
theless fa-
vourable to
virtue and
moral or-
der.

Yet, after all, he who attentively considers the ideas of the Greeks and Romans concerning the moral government of the world and a future state of rewards and punishments, will probably acknowledge, that their general influence must have been favourable to virtue and moral order. Allow them to have been incorrect and dashed with absurdity; still they represent punishments prepared for such qualities and actions as were injurious to the welfare of society; whilst, for those qualities which rendered men eminently useful in the world, they hold forth a reward. Though incorrect, their ideas concerning a future state were exceedingly distinct; they were not vague or general, but such as might be readily conceived by the imagination, in all their circumstances, as really existing. When a man is told that for such a deed he will be put to death, he may shudder and be alarmed, and think of the deed as what he must by no means commit; but place before him the scene and the apparatus for his execution, call him to behold some other criminal mounting the scaffold, addressing his last words in a wild scream of despair to the surrounding spectators, and then launching into eternity—his horror of the crime, and his dread of the punishment, will now be much more powerfully excited. In the same manner, to encourage the soldier marching out to battle, or the mariner setting sail under the prospect of a storm, promise not, merely in general terms, a liberal reward; be sure to specify the nature of the reward which you mean to bestow; describe it so as that it may take hold on the imagination, and may rise in opposition to the images of death and danger with which his courage is to be assailed.

If these phenomena of the human mind are fairly stated, if it be true that general ideas produce no very powerful effects on the sentiments and dispositions of the human heart, it must then be granted, that though the scenes of future reward and punishment, which the heathens considered as prepared for the righteous and the wicked, were of a somewhat motley complexion; yet still, as they were distinct and even minute draughts,

they must have been favourable to virtue, and contributed in no inconsiderable degree to the support of civil order.

Another thing of which we may take notice under this head, is the vast multiplicity of deities with which the Greek and Roman mythology peopled all the regions of nature. Flocks and fields, and woods and oaks, and flowers, and many much more minute objects, had all their guardian deities. These were somewhat capricious at times, it is true, and expected to have attention paid them. But yet the faithful shepherd, and the industrious farmer, knew generally how to acquire their friendship; and in the idea of deities enjoying the same simple pleasures, partaking in the same labours, protecting their possessions, and bringing forward the fruits of the year, there could not but be something of a very pleasing nature, highly favourable to industry, which would animate the labours, and cheer the festivals, of the good people who entertained such a notion; nay, would diffuse a new charm over all the scenes of the country, even in the gayest months of the year.

From all of these particular observations, we think ourselves warranted to conclude, that notwithstanding the mixed characters of the deities who were adored by the celebrated nations of antiquity; though they are in many instances represented as conspicuous for vices and frolics; however vain, absurd, and morally criminal, some of the rites by which they were worshipped may have been, and however incorrect the notions of the heathens concerning the moral government of the universe and a future state of retribution; yet still, after making a just allowance for all these imperfections, the general influence of their religious system was rather favourable than unfavourable to virtue and to the order and happiness of society.

It was not without good reason that the earliest legislators generally endeavoured to establish their laws and constitutions on the basis of religion; government needs the support of opinion; the governed must be impressed with a belief that the particular establishment to which they are required to submit, is the best calculated for their security and happiness, or is supported on some such solid foundation, that it must prove impossible for them to overturn it, or is connected with some awful sanction, which it would be the most heinous impiety to oppose. Of these several notions, the last will ever operate on most men with the most steady influence. We are frequently blind to our own interest; even when eager for the attainment of happiness, we often refuse to take the wisest measures for that end. The great bulk of the people in every community are so little capable of reasoning and foresight, that the public minister who shall most steadily direct his views to the public good will often be the most unpopular. Those laws, and that system of government, which are the most beneficial, will often excite the strongest popular discontents. Again, it is not always easy to persuade people that your power is superior to theirs, when it is not really so. No one man will ever be able to persuade a thousand that he is stronger than they all together; and therefore, in order to persuade one part of his subjects or army that it is absolutely necessary for them to submit to him, because any attempts to resist his power would prove ineffectual, a monarch or general must take care first to persuade another part that it is for their in-

Religion.
27
The notion
of deities
peopling
all nature
of a useful
tendency
when com-
pared with
atheism.

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The advan-
tage of
establishing
laws, &c.
on the ba-
sis of reli-
gion.

Religion.

terest to submit to him; or to impress the whole with a belief that, weak and pitiful as he himself may appear, when viewed singly in opposition to them all, yet by the assistance of some awful invisable beings, his friends and protectors, he is so powerful, that any attempts to resist his authority must prove presumptuous folly. Here, then, the aid of religion becomes requisite. Religious sentiments are the most happily calculated to serve this purpose. Scarce ever was there a society formed, a mode of government established, or a code of laws framed and enacted, without having the religious sentiments of mankind, their notions of the existence of superior invisable beings, and their hopes and fears from those beings, as its fundamental principle. Now, we believe, it is almost universally agreed, that even the rudest form of society is more favourable to the happiness of mankind, and the dignity of the human character, than a solitary and savage state. And if this, with what we have asserted concerning religion as the basis of civil government, be both granted, it will follow, that even the most imperfect religious notions, the most foolish and absurd rites, and the wildest ideas that have been entertained concerning the moral government of the universe by superior beings, and a future state of retribution, have been more advantageous than atheism to the happiness and virtue of human life. We have already granted, nor can it be denied, indeed, that many of the religious opinions which prevailed among the ancient heathens, did contribute, in some degree, to the depravation of their morals: and all that we argue for is, that on a comparative view of the evil and the good which resulted from them, the latter must appear more than adequate to counterbalance the effects of the former.

29
The infinite
advantage
of a pure,
rational,
and true
religion.

But if such be the natural tendency of those principles by which the human heart is made susceptible of religious sentiments, that even enthusiasm and absurd superstition are productive of beneficial effects more than sufficient to counterbalance whatever is malignant in their influence on society—surely a pure rational religion, the doctrines of which are founded in undeniable truth, and all the observances which it enjoins, calculated to promote by their direct and immediate effects some useful purposes, must be in a very high degree conducive to the dignity and the happiness of human nature. Indeed one collateral proof of the truth of any religion, which must have very considerable weight with all who are not of opinion that the system of the universe has been produced and hitherto maintained in order and existence by blind chance, will be its having a stronger and more direct tendency than others to promote the interests of moral virtue and the happiness of mankind in the present life. Even the testimony of thousands, even miracles, prophecies, and the sanction of remote antiquity, will scarce have sufficient weight to persuade us, that a religion is of divine origin, if its general tendency appear to be rather unfavourable than advantageous to moral virtue.

30
Comparative
view
of the ef-
fects of
different
religious
systems.

III. We shall therefore, in the next place, endeavour to determine, from a comparative view of the effects produced on the character and circumstances of society by the most eminent of these various systems of religion which have been in different ages or in different countries established in the world, how far any one of them has in this respect the advantage over the rest; and, if the utility of a system of religion were to

be received as a test of its truth, what particular system might, with the best reason, be received as true, while the rest were rejected.

1st, The principle upon which we here set out is, that all, or almost all, systems of religion with which we are acquainted, whether true or false, contribute more or less to the welfare of society. But as one field is more fruitful, and one garden less overgrown with weeds than another; so, in the same manner, one system of religious opinions and ceremonies may be more happily calculated than others to promote the truest interests of mankind. In opposition to those philosophers who are so vehement in their declamations against the inequality of ranks, we have ever been of opinion, that refinement and civilization contribute to the happiness of human life. The character of the solitary savage is, we are told, more dignified and respectable than that of the philosopher and the hero, in proportion as he is more independent. He is indeed more independent; but his independence is that of a stone, which receives no nourishment from the earth or air, and communicates none to animals or vegetables around it. In point of happiness, and in point of respectability, we cannot hesitate a moment, let philosophers say what they will, to prefer a virtuous, enlightened, and polished Briton to any of the rudest savages, the least acquainted with the restraints and the sympathies of social life, that wander through the wild forests of the western world. But if we prefer civilization to barbarism, we must admit, that in this view Christianity has the advantage over every other religious system which has in any age or country prevailed among men; for nowhere has civilization and useful science been carried to such a height as among Christians.

It is not, indeed, in any considerable degree that the absurd superstitions of those rude tribes, who can scarce be said to be formed into any regular society, can contribute to their happiness. Among them the faculty of reason is but in a very low state; and the moral principle usually follows the improvement or the depression of the reasoning faculty. Their appetites and merely animal passions are almost their only principles of action: their first religious notions, if we suppose them not to be derived from revelation or tradition, are produced by the operation of gratitude, or grief, or hope, or fear, upon their imaginations. And to these, however wild and fanciful, it is not improbable that they may owe some of their earliest moral notions. The idea of superior powers naturally leads to the thought that those powers have some influence on human life. From this they will most probably proceed to fancy one set of actions agreeable, another offensive, to those beings to whom they believe themselves subject. And this, perhaps, is the first distinction that savages can be supposed to form between actions, as right or wrong, to be performed or to be avoided. But if this be the case, we must acknowledge that the religious notions of the savage, however absurd, contribute to elevate his character, and to improve his happiness, when they call forth the moral principle implanted in his breast.

But if the social state be preferable to a state of wild and solitary independence, even the rude superstitions of unenlightened tribes of savages are in another respect beneficial to those among whom they prevail. They usually

Religion.

31
Advantage
of civiliza-
tion;

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And there-
fore of
Christia-
nity.

33
View of
the various
religious
notions of
pagan na-
tions.

Religion. usually form, as has been already observed under this article, the basis of civil order. Religious opinions may lead the great body of the community to reverence some particular set of institutions, some individual, or some family, which are represented to them as peculiarly connected with the gods whom they adore. Under this sanction some form of government is established; they are taught to perform social duties, and rendered capable of social enjoyments. Not only Numa and Lycurgus, but almost every legislator who has sought to civilize a rude people, and reduce them under the restraints of legal government, have endeavoured to impress their people with an idea that they acted with the approbation, and under the immediate direction, of superior powers. We cannot but allow that the rude superstitions of early ages are productive of these advantages to society; but we have already acknowledged, and it cannot be denied, that they are also attended with many unhappy effects. When we view the absurdities intermixed with the systems of religion which prevailed among most of the nations of antiquity, we cannot help lamenting that so noble a principle of human nature as our religious sentiments should be liable to such gross perversion; and when we view the effects which they produce on the morals of mankind, and the forms of society, though we allow them to have been upon the whole rather beneficial than hurtful, yet we cannot but observe, that their unfavourable effects are by far more numerous than if they had been better directed. What unhappy effects, for instance, have been produced by false notions concerning the condition of human souls in a future state. Various nations have imagined that the scenes and objects of the world of spirits are only a shadowy representation of the things of the present world. Not only the souls of men, according to them, inhabit those regions; all the inferior animals and vegetables, and even inanimate bodies that are killed or destroyed here, are supposed to pass into that visionary world; and, existing there in unsubstantial forms, to execute the same functions, or serve the same purposes, as on earth. Such are the ideas of futurity that were entertained by the inhabitants of Guinea. And by these ideas they were induced, when a king or great man died among them, to provide for his comfortable accommodation in the world of spirits, by burying with him meat and drink for his subsistence, slaves to attend and serve him, and wives with whom he might still enjoy the pleasures of love. His faithful subjects vied with each other in offering, one a servant, another a wife, a third a son or daughter, to be sent to the other world in company with the monarch, that they might there be employed in his service. In New Spain, in the island of Java, in the kingdom of Benen, and among the inhabitants of Indostan, similar practices on the same occasion, owing no doubt to similar notions of futurity, have been prevalent. But such practices as these cannot be viewed with greater contempt on account of the opinions which have given rise to them, than horror on account of their unhappy effects on the condition of those among whom they prevail. A lively impression of the enjoyments to be obtained in a future state, together with some very false or incorrect notions concerning the qualities or actions which were to entitle the departing soul to admission into the scene of those enjoy-

ments, is said to have produced equally unhappy effects among the Japanese. They not only bribed their priests to solicit for them; but looking upon the enjoyments of the present life with disgust or contempt, they used to dash themselves from precipices, or cut their throats, in order to get to paradise as soon as possible. Various other superstitions subsisting among rude nations might here be enumerated, as instances of the perversion of the religious principles of the human heart, which render them injurious to virtue and happiness. The austerities which have been practised, chiefly among rude nations, as means of propitiating superior powers, are especially worthy of notice.—When the favourite idol of the Banians is carried in solemn procession, some devotees prostrate themselves on the ground, that the chariot in which the idol is carried may run over them; others, with equal enthusiasm, dash themselves on spikes fastened on purpose to the car. Innumerable are the ways of torture which have been invented and practised on themselves by men ignorantly striving to recommend themselves to the favour of heaven. These we lament as instances in which religious sentiments have been so ill directed by the influence of imagination, and unenlightened erring reason, as to produce unfavourable effects on the human character, and oppose the happiness of social life.—Though we have argued, that even the most absurd systems of religion that have prevailed in the world, have been upon the whole rather beneficial than injurious to the dignity and happiness of human nature; yet if it shall not appear, as we proceed farther in our comparative view of the effects of religion on society, that others have been attended with happier effects than these superstitions which belong to the rude ages of society, we may scarce venture to brand the infidel with the appellation of *fool*, for refusing to give his assent to religious doctrines, or to act under their influence.

2d, The polytheism of the Greeks and Romans, and other heathen nations in a similar state of civilization, we have already considered as being, upon the whole, rather favourable than unfavourable to virtue; but we must not partially conceal its defects. The vicious characters of the deities which they worshipped, the incorrect notions which they entertained concerning the moral government of the universe and a future retribution, the absurdity of their rites and ceremonies, and the criminal practices which were intermixed with them, must have altogether had a tendency to pervert both the reasoning and the moral principles of the human mind. The debaucheries of the monarch of the gods, and the fidelity with which his example in that respect was followed by the whole crowd of the inferior deities, did, we know, dispose the devout heathen, when he felt the same passions which had asserted their power over the gods, to gratify them without scruple. It is a truth, however, and we will not attempt to deny or conceal it, that the genius of the polytheism of the Greeks and Romans was friendly to the arts; to such of them especially as are raised to excellence by the vigorous exertion of a fine imagination; music, poetry, sculpture, architecture, and painting, all of these arts appear to have been considerably indebted for that perfection to which they attained, especially among the Greeks, to the splendid and fanciful system of mythology which was received among that ingenious people.—

But

Religion.

Religion.

But we cannot give an equally favourable account of its influence on the sciences. There was little in that system that could contribute to call forth reason. We may grant indeed, that if reason can be so shocked with absurdity as to be roused to a more vigorous exertion of her powers, and a more determined assertion of her rights in consequence of surveying it; in that case this system of mythology might be favourable to the exercise and improvement of reason; not otherwise.

The connection of paganism with morality was too imperfect for it to produce any very important effects on the morals of its votaries. Sacrifices and prayers, and temples and festivals, not purity of heart and integrity of life, were the means prescribed for propitiating the favour of the deities adored by the Pagans. There were other means, too, besides true heroism and patriotism, of gaining admission into the Elysian fields, or obtaining a seat in the council of the gods. Xenophon, in one of the most beautiful parts of his *Memoirs of Socrates*, represents Hercules wooed by Virtue and Pleasure in two fair female forms, and deliberating with much anxiety which of the two he should prefer. But this is the fiction of a philosopher desirous to improve the fables of antiquity in such a way as to render them truly useful. Hercules does not appear, from the tales which are told us of his adventures, to have been at any such pains in choosing his way of life. He was received into the palace of Jove, without having occasion to plead that he had through life been the faithful follower of that goddess to whom the philosopher makes him give the preference; his being the son of Jove, and his wild adventures, were sufficient without any other merits to gain him that honour. The same may be said concerning many of the other demi-gods and heroes who were advanced to heaven, or conveyed to the blissful fields of Elysium. And whatever might be the good effects of the religion of Greece and Rome in general upon the civil and political establishments, and in some few instances on the manners of the people, yet still it must be acknowledged to have been but ill calculated to impress the heart with such principles as might in all circumstances direct to a firm, uniform, tenor of virtuous conduct.

But after what has been said on the character of this religion elsewhere (see *POLYTHEISM*), and in the second part of this article, we cannot without repetition enlarge farther on it here. Of the Jewish religion, however, we have as yet said little, having on purpose reserved to this place whatever we mean to introduce under the article, concerning its influence on society.

34
View of
Judaism.

3d, When we take a general view of the circumstances in which the Jewish religion was established, the effects which it produced on the character and fortune of the nation, the rites and ceremonies which it enjoined, and the singular political institutions to which it gave a sanction, it may perhaps appear hard to determine, whether it were upon the whole more or less beneficial to society than the polytheism of the Egyptians, Greeks, and Romans. But if such be the judgment which preconceived prejudices, or an hasty and careless view, have induced some to form of this celebrated system; there are others who, with equal keenness, and sounder reasoning, maintain, that it was happily calculated, not only to accomplish the great design of

preparing the way for the promulgation of the Gospel, Religion, but likewise to render the Jews a more refined and virtuous people, and a better regulated community, than any neighbouring nation. In the first place, the attributes of the Deity were very clearly exhibited to the Jews in the establishment of their religion. The miracles by which he delivered them from servitude, and conducted them out of Egypt, were striking demonstrations of his power; that condescension with which he forgave their repeated acts of perverseness and rebellion, was a most convincing proof of his benevolence; and the impartiality with which the observance and the violation of his laws were rewarded and punished, even in the present life, might well convince them of his justice. A part of the laws which he dictated to Moses are of eternal and universal obligation; others of them were local and particular, suited to the character of the Jews, and their circumstances in the land of Canaan. The Jewish code, taken altogether, is not to be considered as a complete system of religion, or laws calculated for all countries and all ages of society. When we consider the expediency of this system, we must take care not to overlook the design for which the Jews are said to have been separated from other nations, the circumstances in which they had lived in Egypt, the customs and manners which they had contracted by their intercourse with the natives of that country, the manner in which they were to acquire to themselves settlements by extirpating the nations of Canaan, the rank which they were to hold among the nations of Syria and the adjacent countries, together with the difficulty of restraining a people so little civilized and enlightened from the idolatrous worship which prevailed among their neighbours: All these circumstances were certainly to be taken into account; and had the legislator of the Jews not attended to them, his institutions must have remained in force only for a short period; nor could they have produced any lasting effects on the character of the nation. With a due attention to these circumstances, let us descend to an examination of particulars.

Although in every religion or superstition that has prevailed through the world, we find one part of its institutions to consist in the enjoining of certain festivals to be celebrated by relaxation from labour, and the performance of certain ceremonies in honour of the gods; yet in none, or almost none besides the Jewish, do we find every seventh day ordained to be regularly kept holy. One great end which the legislator of the Jews had in view in the institution of the Sabbath was, to impress them with a belief that God was the maker of the universe. In the early ages of the world a great part of mankind imagined the stars, the sun, the moon, and the other planets, to be eternal, and consequently objects highly worthy of adoration. To convince the Israelites of the absurdity of this belief, and prevent them from adopting that idolatry, Moses taught them, that those conspicuous objects which the Gentile nations regarded as eternal, and endowed with divine power and intelligence, were created by the hand of God; who, after bringing all things out of nothing, and giving them form, order, and harmony, in the space of six days, rested on the seventh from all his works. Various passages in the Old Testament concur to show, that this was one great end of the institution of the Sabbath.

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The Sabbath.

Religion. Sabbath. The observance of the Sabbath, and detestation of idolatrous worship, are frequently inculcated together; and, again, the breach of the Sabbath, and the worship of idols, are usually reprobated at the same time. Another good reason for the institution of a Sabbath might be, to remind the Jews of their deliverance from bondage, to inspire them with humanity to strangers and domestics, and to mitigate the rigours of servitude.

³⁶
And other
festivals.

The purposes for which the other festivals of the Jewish religion were instituted appear also of sufficient importance. The great miracle, which, after a series of other miracles, all directed to the same end, finally effected the deliverance of the Jews out of Egypt; and their actual departure from that land of servitude, might well be commemorated in the feast of the passover. To recal to the minds of posterity the history of their ancestors, to impress them with an awful and grateful sense of the goodness and greatness of God, and to make them think of the purposes for which his almighty power had been so signally exerted, were surely good reasons for the institution of such a festival. The feast of Pentecost celebrated the first declaration of the law by Moses, in the space of fifty days after the feast of the passover. It served also as a day of solemn thanksgiving for the blessings of a plenteous harvest. On the feast of tabernacles, they remembered the wanderings of their ancestors through the wilderness, and expressed their gratitude to heaven for the more comfortable circumstances in which they found themselves placed. The feast of new moons served to fix their kalendar, and determine the times at which the other festivals were to be celebrated; on it trumpets were sounded, to give public notice of the event which was the cause of the festival; no servile works were performed, divine service was carefully attended, and the first fruits of the month were offered to the Lord. The Jewish legislator limited his festivals to a very small number, while the heathens devoted a considerable part of the year to the celebration of theirs. But we perceive the occasions upon which the Jewish festivals were celebrated to have been of suitable importance; whereas those of the heathens were often celebrated on trifling or ridiculous occasions. Piety and innocent recreation shared the Jewish festival; the festivals of the heathens were chiefly devoted to debauchery and idleness.

³⁷
The sabbatical year,
jubilee, and
laws of
usury.

The Hebrews had other solemn seasons of devotion besides the weekly Sabbath and these annual festivals. Every seventh year they rested from labour: they were then neither to plough, to sow, nor to prune; and whatever the earth produced spontaneously that year belonged rather to strangers, orphans, and the poor, than to the proprietors of the ground. On this year insolvent debtors were discharged from all debts contracted by purchasing the necessaries of life; and the great end of this release from debts contracted during the preceding six years, appears to have been to prevent the Hebrew from flying to the Gentiles and forsaking his religion when embarrassed in his circumstances. None but native Israelites and proselytes of righteousness were admitted to this privilege; it was refused to strangers, and even to proselytes of the gate. The jubilee was a festival to be celebrated every fiftieth year. It produced the same effects with the sabbatical year as to rest from labour and the discharge of debts; with this

addition, that on the year of the jubilee slaves obtained their freedom, and the lands reverted to the old proprietors. On the year of the jubilee, as on the sabbatical year, the lands were to rest uncultivated, and law-suits were now to terminate. The chief design of this institution appears to have been, to preserve the order of ranks and property originally established in the Hebrew state. None but Israelites or circumcised converts could enjoy the benefit of this institution; nor could even these hope to regain their estates on the year of the jubilee, if they sold them for any other purpose but to supply their necessities. The law relative to usury was evidently founded on the same plan of polity with respect to property. To almost any other nation such a law, it must be confessed, would have been unsuitable and unjust; but as the Jews were not designed for a trading nation, they could have little occasion to borrow, unless to relieve distress; and as an indulgence to people in such circumstances, the Jew was forbidden to exact usury from his brother to whom he had lent money.

The Jewish legislator, we may well think, would be disposed to adopt every proper method to prevent his nation from falling away into the idolatry of heathen nations. Probably one reason of the distinctions between *clean* beasts which they were permitted to eat, and *unclean* beasts, the eating of which they were taught to consider as pollution, was to prevent them from convivial intercourse with profane nations, by which they might be seduced to idolatry. We do not readily sit down at table with people who are fond of dishes which we regard with abhorrence. And if the Jews were taught to loathe the flesh of some of those animals which were among the greatest delicacies of the Gentiles, they would naturally of consequence avoid sitting down at meat with them, either at their ordinary meals or at those entertainments which they prepared in honour of their deities; and this we may with good reason consider as one happy mean to preserve them from idolatry. Besides, the Jews were permitted, or rather enjoined, to eat animals which the Gentiles revered as sacred, and from which they religiously withheld all violence. Goats, sheep, and oxen, were worshipped in Egypt (see POLYTHEISM and PAN); and several learned writers are of opinion, that Moses directed his people to sacrifice and eat certain of the favourite animals of the Egyptians, in order to remove from their minds any opinions which they might have otherwise entertained of the sanctity of those pretended deities. Many of the observances which Moses enjoined with regard to food, appear to have been intended to inspire the Israelites with contempt for the superstitions of the people among whom they had so long sojourned. They were to kill the animal which the Egyptians worshipped; to roast the flesh which that people ate raw; to eat the head, which they never ate; and to dress the entrails, which they set apart for divination. These distinctions concurred with the peculiarities of their dress, language, government, customs, places, and times of worship, and even the natural situation of their country, by which they were in a manner conlined and fortified on all sides, to separate them in such a manner from neighbouring nations, that they might escape the infection of their idolatry. And if we reflect both on the design for which Providence separated the Israelites from other nations,

Religion.

³⁸
Of clean
and unclean
beasts, and
the place
of worship.

Religion. nations, and on the probability that, in the state of society in which mankind were during the earlier period of the Jewish history, the Jews, by mixing with other nations, would rather have been themselves converted to idolatry than have converted idolatrous nations to the worship of the true God; we cannot but be satisfied, that even this, however it may at first appear, was a benefit, not a disadvantage; and in the author of their legislation wisdom, not caprice.

39
Other distinguishing particulars in the Jewish ritual.

But not only in the distinctions of meats, and between clean and unclean animals, does the legislator of the Jews appear to have laboured to fix a barrier between them and other nations which might preserve them from the contagion of idolatry—we shall not err, perhaps, if we ascribe many particulars of their worship to this design in the institutor. The heathens had gods who presided over woods, rivers, mountains, and valleys, and to each of these they offered sacrifices, and performed other rites of worship in a suitable place. Sometimes the grove, sometimes the mountain top, at other times the bank of the river or the brink of the spring, was the scene of their devotions. But as the unity of the divine nature was the truth the most earnestly inculcated on the children of Israel; so in order to impress that truth on their minds with the more powerful efficacy, they were taught to offer their sacrifices and other offerings only in one place, the place chosen by the Lord; and death was threatened to those who dared to disobey the command. To confirm this idea, one of the prophets intimates, that when idolatry should be abolished, the worship of God should not be confined to Jerusalem, but it would then be lawful to worship him anywhere.

40
Effects of these institutions, &c. in impressing a respect for the Deity.

The whole institutions and observances of the Jewish religion appear to have been designed and happily calculated to impress the minds of the people with veneration and respect for the Deity. All the festivals which either commemorated some gracious dispensation of his providence towards their ancestors, or served as days of thanksgiving for the constant returns of his goodness to those who celebrated them, and all the other rites designed to fortify them against idolatry, served at the same time to impress their hearts with awful reverence for the God of Jacob. Various other particulars in the institutions of the Jewish economy appear to have been directed solely to that end. Into the most sacred place, the Holy of Holies, none but the high priest was admitted, and he only once a year. No fire was used in sacrifice but what was taken from the altar. Severe punishments were on various occasions inflicted on such as presumed to intermeddle in the service of the sanctuary in a manner contrary to what the law had directed. All the laws respecting the character, the circumstances, and the services, of the priests and the Levites, appear plainly to have a similar tendency.

In compliance with the notions of Deity which naturally prevailed among a gross and rude people, though no visible object of worship was granted to the Jews, yet they were allowed in their wanderings through the wilderness to have a tabernacle or portable temple, in which the sovereign of the universe sometimes deigned to display some rays of his glory. Incapable as they were of conceiving aright concerning the spiritual nature and the omnipresence of the Deity, they might

possibly have thought Jehovah careless and indifferent about them, had they been at no time favoured with a visible demonstration of his presence.

Religion.
41
Sacrifices and lustrations.

The sacrifices in use among the Gentiles in their worship of idols were permitted by the Jewish legislator; but he directed them to be offered with views very different from those with which the Gentiles sacrificed to their idols. Some of the sacrifices of the Jewish ritual were designed to avert the indignation of the Deity; some to expiate offences and purify the heart; and all of them to abolish or remove idolatry. Lustrations or ablutions entered likewise into the Jewish ritual; but these were recommended and enjoined by Moses for purposes widely different from those which induced the heathens to place so high a value upon them. The heathens practised them with magical and superstitious ceremonies; but in the Jewish ritual they were intended simply for the cleansing away of impurities and pollutions.

The theocratical form of government to which the Jews were subject, the rewards which they were sure of receiving, and the punishments which they were equally liable to suffer in the present life, had a powerful effect to remove superstition and preserve them from idolatry, as well as to support all the social virtues among them. They were promised a numerous offspring, a land flowing with milk and honey, long life, and victory over their enemies, on the condition of their paying a faithful obedience to the will of their heavenly Sovereign; plague, famine, disease, defeats, and death, were threatened as the punishments to be inflicted on those who violated his laws: and these sanctions, it must be allowed, were happily accommodated to the genius of a rude and carnal-minded people, attentive only to present objects, and not likely to be influenced by remote and spiritual considerations.

42
Tendency of theocracy and temporal sanctions.

There were other rites and prohibitions in the Mosaic law, which appear to have had but little connection with religion, morals, or policy. These may be more liable to be objected against, as adding an unnecessary weight to a burden which, though heavy, might yet have been otherwise borne in consideration of the advantages connected with it. Even these, however, may perhaps admit of being viewed in a light in which they shall appear to have been in no way unfavourable to the happiness of those to whom they were enjoined. They appear to have had none of them an immoral tendency: all of them had, in all probability, a tendency to remove or prevent idolatry, or to support, in some way or other, the religious and the civil establishment to which they belonged.

43
Rites and prohibitions of less apparent utility.

From these views of the spirit and tendency of the Jewish religion, we may fairly conclude it to have been happily calculated to promote the welfare of society. In comparing it with other religions, it is necessary to reflect on the peculiar purposes for which it was given; that its two principal objects were to preserve the Jews a separate people, and to guard them against the contagion of the surrounding idolatry. When these things are taken into consideration, every candid mind acquainted with the history of ancient nations will readily acknowledge that the whole system, though calculated indeed in a peculiar manner for them, was as happily adapted for the purposes for which it had been wisely and graciously intended, as it is possible to imagine any such

44
The whole admirably calculated for the purposes intended.

Religion. such system to be. It would be unhappy, indeed, if, on a comparison of pure theism with polytheism, the latter, with all its absurdities, should be found more beneficial to mankind than the former. The theism of the Jews was not formed to be disseminated through the earth; that would have been inconsistent with the purposes for which it is said to have been designed. But while the Jews were separated by their religion from all other nations, and perhaps, in some degree, fixed and rendered stationary in their progress towards refinement, they were placed in circumstances, in respect to laws, and government, and religion, and moral light, which might with good reason render them the envy of every other nation in the ancient world.

45
View of
Christi-
anity.

IV. The Christian religion next demands our attention. It is to be considered as an improvement of the Jewish, or a new superstructure raised on the same basis. If the effects of the Jewish religion were beneficial to those among whom it was established, they were confined almost to them alone. But is the spirit of Christianity equally pure and benignant? Is its influence equally beneficial and more diffusive than that of Judaism? Does it really merit to have triumphed over both the theism of the Jews and the polytheism of the heathens?

46
The doc-
trines pure
and rites
simple.

If we consider the doctrines and precepts of the Christian religion, nothing can be more happily calculated to raise the dignity of human nature, and promote the happiness of mankind. The happiness of the individual is best promoted by the exercise of love and gratitude towards God, and resignation to his providence; of humanity, integrity, and good will towards men; and by the due government of our appetites and passions. Social happiness again proceeds from the members of society entertaining a disinterested regard for the public welfare; being actively industrious each in his proper sphere of exertion; and being strictly just and faithful, and generously benevolent in their mutual intercourse. The tenor of the gospel inculcates these virtues; it seems everywhere through the whole of the Christian code to have been the great design of its Author to inspire mankind with mild, benevolent, and peaceable dispositions, and to form them to courteous manners. Christianity again represents the Deity and his attributes in the fairest light; even so as to render our ideas of his nature, and the manner in which he exerts his power, consistent with the most correct principles of morality that can be collected from all the other religions that have prevailed in the earth, and from the writings of the most admired philosophers. The ritual observances which Christianity enjoins are few in number, easy to perform, decent, expressive, and edifying. It inculcates no duties but what are founded on the principles of human nature, and on the relation in which men stand to God, their Creator, Redeemer, and Sanctifier; and it prescribes accurate rules for the regulation of the conduct. The assistance of the spirit of God is promised in this sacred volume to those who assiduously labour to discharge the duties which it enjoins; and it exhibits a striking example of spotless purity, which we may safely venture to imitate. The gospel teaches that worldly afflictions are incident to both good and bad men; a doctrine highly conducive to virtue, which consoles us in distress, prevents despair, and encourages us to persist firmly in our integrity un-

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der every difficulty and trial. Christianity represents all men as children of the same God, and heirs of the same salvation, and levels all distinctions of rich and poor, as accidental and insignificant in the sight of him who rewards or punishes with impartiality according to the merits or demerits of his creatures. This doctrine is highly favourable to virtue, as it tends to humble the proud, and to communicate dignity of sentiment to the lowly; to render princes and inferior magistrates moderate and just, gentle and condescending, to their inferiors. It farther requires husbands to be affectionate and indulgent to their wives, wives to be faithful and respectful to their husbands, and both to be true and constant to each other. Such is the purity of the gospel, that it forbids us even to harbour impure thoughts; it requires us to abandon our vices, however dear to us; and to the cautious wisdom of the serpent it directs us to join the innocent simplicity of the dove. The Christian dispensation, to prevent a perseverance in immorality, offers pardon for the past, provided the offender forsake his vicious practices, with a firm resolution to act differently in future. The sanctions of the gospel have a natural tendency to exalt the mind above the paltry pursuits of this world, and to render the Christian incorruptible by wealth, honours, or pleasures. The true Christian not only abstains from injustice towards others, but even forgives those injuries which he himself suffers, knowing that he cannot otherwise hope for forgiveness from God. Such are the precepts, such the spirit, and such the general tendency of the gospel. Even those who refused to give credit to its doctrines and history have yet acknowledged the excellence of its precepts. They have acknowledged, that "no religion ever yet appeared in the world of which the natural tendency was so much directed to promote the peace and happiness of mankind as the Christian; and that the gospel of Christ is one continued lesson of the strictest morality, of justice, benevolence, and universal charity." These are the words of Bolingbroke, one of its keenest and most insidious opponents. Without examining the effects of this religion on society, we might almost venture to pronounce with confidence, that a religion, the precepts of which are so happily formed to promote all that is just and excellent, cannot but be in the highest degree beneficial to mankind. By reviewing the effects which it has actually produced, the favourable opinion which we naturally conceive of it, after considering its precepts, cannot but be confirmed.

One circumstance we must take notice of as rather unfavourable to this review. It is really impossible to do justice to Christianity by such a discussion of its merits. The virtues which it has a natural tendency to produce and cherish in the human heart, are not of a noisy ostentatious kind; they often escape the observation of the world. Temperance, gentleness, patience, benevolence, justice, and general purity of manners, are not the qualities which most readily attract the admiration and obtain the applause of men. The man of Ross, whom Mr Pope has so justly celebrated, was a private character; his name is now likely to live, and his virtues to be known to the latest posterity: and yet, however disinterested his virtues, however beneficial his influence to all around him, had his character not attracted the notice of that eminent poet, his name

Religion.

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The virtues
it recom-
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unostentatious.

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Religion.

48
Its effects
on the
manners of
nations.

would perhaps ere this time have been lost in oblivion. Individuals in private life seldom engage the attention of the historian; his object is to record the actions of princes, warriors, and statesmen. Had not the professors of Christianity in the earlier ages of its existence been exposed to persecutions, and unjust accusations from which they were called on to vindicate themselves, we should be strangers to the names and virtues of saints and martyrs, and to the learning and endowments of the first apologists for Christianity. We can therefore only trace the general influence of the institutions of Christianity on society. We cannot hope to make an accurate enumeration of particulars. In many of the countries in which it has been established, it has produced a very favourable change on the circumstances of domestic life. Polygamy, a practice repugnant to the will of our Creator (see POLYGAMY), who has declared his intentions in this instance in the plainest manner, by causing nearly equal numbers of males and females to be brought into the world, was never completely abolished but by Christianity.

The practice of divorce, too, though in some cases proper and even necessary, had been so much abused at the time of our Saviour's appearance in the world, that he found reason to declare it unlawful, unless in the case of adultery. The propriety and reasonableness of this prohibition will sufficiently appear, if we consider, that when divorces are easily obtained, both parties will often have nothing else in view at the period of marriage than the dissolution of their nuptial engagements after a short cohabitation; the interests of the husband and the wife will almost always be separate; and the children of such a marriage are scarce likely to enjoy the cordial affection and tender watchful care of either parent. The husband in such a case will naturally be to his wife, not a friend and protector, but a tyrant; fear and deceit, not love, gratitude, or a sense of duty, will be the principles of the wife's obedience.

In another instance, likewise, Christianity has produced an happy change on the circumstances of domestic life; it must be acknowledged to have contributed greatly to the abolition of slavery, or at least to the mitigation of the rigour of servitude. The customs and laws of the Romans in relation to slaves were cruel and severe. Masters were often so inhuman as to remove aged, sick, or infirm slaves, into an island in the Tiber, where they suffered them to perish without pity or assistance. The greater part of the subjects of many of those republics which enjoyed the most liberty, groaned under tyrannical oppression; they were condemned to drag out a miserable existence in hard labour, under inhuman usage, and to be transferred like beasts from one master to another. The hardships of slavery were eased, not by any particular precept of the Gospel, but by the gentle and humane spirit which breathed through the general tenor of the whole system of doctrines and precepts of which the Gospel consists. It must indeed be allowed, that a trade in slaves is at present carried on by people who presume to call themselves Christians, and protected by the legislature of Christian states: but the spirit of the Christian code condemns the practice, and the true Christian will not engage in it.

Partly by the direct and conspicuous, partly by the secret and unseen, influence of Christianity since its promulgation in the world, the hearts of men have been

gradually softened; even barbarians have been formed to mildness and humanity; the influence of selfishness has been checked and restrained; and even war, amid all the pernicious improvements by which men have sought to render it more terrible, has assumed much more of the spirit of mildness and peace than ever entered into it during the reign of heathenism.

If we review the history of mankind with a view to their political circumstances, we shall find, that by some means or other, it has happened, since the time when the Gospel was first preached, that both systems of legislature and forms of government have been raised to much greater perfection, at least in those parts of the world into which the religion of Jesus has made its way, and obtained an establishment.

The popular government of the Romans, notwithstanding the multiplicity of their laws, and the imperfections of their political constitution, was, no doubt, happily enough adapted to promote the increase of the power and the extension of the empire of Rome. In Greece there were various republics, the wisdom and impartiality of whose laws have been highly celebrated. But we apprehend that there is a sufficient number of well authenticated facts to warrant us to affirm, that since Christianity has been propagated, and has had sufficient time to produce its full effect on arts, manners, and literature, even under governments the form of which might appear less favourable than the celebrated models of antiquity to the liberty and happiness of the people in general, these actually have been much better provided for than under the laws of Athens or Sparta, or even of Rome in the days of the consuls. It is a just and happy observation of Montesquieu, who has attributed so much to the influence of climate and local circumstances, that "the mildness so frequently recommended in the Gospel is incompatible with the despotic rage with which an arbitrary tyrant punishes his subjects, and exercises himself in cruelty. It is the Christian religion (says he) which, in spite of the extent of empire, and the influence of climate, has hindered despotism from being established in Ethiopia, and has carried into Africa the manners of Europe. The heir to the empire of Ethiopia enjoys a principality, and gives to other subjects an example of love and obedience—Not far from hence may be seen the Mahometan shutting up the children of the king of Sennaar, at whose death the council sends to murder them in favour of the prince who ascends the throne. Let us set before our eyes (continues that eloquent writer), in the third chapter of the 24th book of his Spirit of Laws, on one hand the continual massacres of the kings and generals of the Greeks and Romans, and on the other the destruction of people and cities by the famous conquerors Timur Beg and Jenghiz Kan, who ravaged Asia, and we shall perceive, that we owe to Christianity in government a certain political law, and in war a certain law of nations, which allows to the conquered the great advantages of liberty, laws, wealth, and always religion, when the conqueror is not blind to his own interest."

These are the reflections of no common judge in this matter, but one who had long studied the history of nations, and observed the phenomena of the various forms of society, with such success as few others have attained.

Religion.

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Its effects
in softening
and huma-
nizing bar-
barians.

But on no occasion has the mild influence of Christianity been more eminently displayed, or more happily exerted, than in softening and humanizing the barbarians who overturned the Roman empire. The idolatrous religion which prevailed among those tribes before their conversion to Christianity, instead of disposing them to cultivate humanity and mildness of manners, contributed strongly to render them fierce and blood-thirsty, and eager to distinguish themselves by deeds of savage valour. But no sooner had they settled in the dominions of Rome, and embraced the principles of Christianity, than they became a mild and generous people.

We are informed by Mosheim, who was at pains to collect his materials from the most authentic sources, that in the 10th century Christian princes exerted themselves in the conversion of nations whose fierceness they had experienced, in order to soften and render them more gentle. The mutual humanity with which nations at war treat each other in modern times, is certainly owing, in a great measure, to the influence of the mild precepts of the Gospel. It is a fact worthy of notice too, that during the barbarous ages, the spiritual courts of justice were more rational and impartial in their decisions than civil tribunals.

How many criminal practices which prevailed among heathen nations have been abolished by their conversion to Christianity! Christians of all nations have been observed to retain the virtues and reject the vicious practices of their respective countries. In Parthia, where polygamy prevailed, they are not polygamists; in Persia, the Christian father does not marry his own daughter. By the laws of Zoroaster the Persians committed incest until they embraced the Gospel; after which period they abstained from that crime, and observed the duties of chastity and temperance, as enjoined by its precepts. Even the polished and enlightened Romans were cruel and blood-thirsty before the propagation of the Gospel. The breaking of a glass, or some such trifling offence, was sufficient to provoke Vindex Pollio to cast his slaves into fish-ponds to be devoured by lampreys. The effusion of human blood was their favourite entertainment; they delighted to see men combating with beasts, or with one another; and we are informed on respectable authority, that no wars ever made such havoc on mankind as the fights of gladiators, which sometimes deprived Europe of 20,000 lives in one month. Not the humanity of Titus, nor the wisdom and virtue of Trajan, could abolish the barbarous spectacle. However humane and wise in other instances, in this practice those princes complied with the custom of their country, and exhibited splendid shows of gladiators, in which the combatants were matched by pairs; who, though they had never injured nor offended each other, yet were obliged to maim and murder one another in cold blood. Christian divines soon exercised their pens against these horrid practices; the Christian emperor Constantine restrained them by edicts, and Honorius finally abolished them. It would be tedious to proceed through an enumeration of particulars; but wherever Christianity has been propagated, it has constantly operated to the civilization of the manners of mankind, and to the abolition of absurd and criminal practices. The Irish, the Scotch, and all the ancient inhabitants of the British isles, were, notwithstanding

their intercourse with the Romans, rude barbarians, till such time as they were converted to Christianity. The inhuman practice of exposing infants, which once prevailed so generally over the world, and still prevails among some Pagan nations, even under very humane and enlightened legislatures, yielded to the influence of Christianity.

Let us likewise remember, in honour of Christianity, that it has contributed eminently to the diffusion of knowledge, the preservation and the advancement of learning. When the barbarians overspread Europe, what must have become of the precious remains of polished, enlightened antiquity, had there been no other depositaries to preserve them but the heathen priests? We allow that even the Romish clergy during the dark ages did not study the celebrated models of ancient times with much advantage themselves, and did not labour with much assiduity to make the laity acquainted with them. It must even be acknowledged, that they did not always preserve those monuments of genius with sufficient care, as they were often ignorant of their real value. Yet, after all, it will be granted, it cannot be denied, that had it not been for the clergy of the Christian church, the lamp of learning would, in all probability, have been entirely extinguished, during that night of ignorance and barbarity in which all Europe were buried for a long series of centuries, after the irruption of the barbarians into the Roman empire.

Such is the excellence of the Christian system, and such its tendency to meliorate the human character, that its beneficial influence has not been confined to those who have received its doctrines and precepts, and have professed themselves Christians; it has even produced many happy effects on the circumstances and the characters of Pagans and infidels, who have had opportunities of beholding the virtues of Christians, and learning the excellence of the morality of the gospel. Those virtues which distinguished the character of the apostate Julian were surely owing in no inconsiderable degree to his acquaintance with Christianity; and it is an undeniable fact, that after the propagation of Christianity through the Roman empire, even while the purity of that holy religion was gradually debased, the manners of those Pagans who remained unconverted became more pure, and their religious doctrines and worship less immoral and absurd.—We might here adduce a tedious series of facts to the same purpose. Whenever Christians have had any intercourse with Pagan idolaters, and have not concealed the laws of the gospel, nor shown by their conduct that they disregarded them, even those who have not been converted to Christianity have, however, been improved in their dispositions and manners by its influence. The emperor, whose virtues we have mentioned as arising, in a certain degree, from his acquaintance with Christianity, in a letter to an Heathen pontiff, desires him to turn his eyes to the means by which the superstition of Christians was propagated: by kindness to strangers, by sanctity of life, and by the attention which they paid to the burial of the dead. He recommends an imitation of their virtues, exhorts him to cause the priests of Galatia to be attentive to the worship of their gods, and authorises him to strip them of the sacerdotal function, unless they obliged their wives, children, and servants,

Religion.

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Learning
is much
indebted to
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The bene-
ficial influ-
ence of
Christi-
anity has ex-
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even to
those who
have not
embraced
it.

Religion.

to pay attention to the same duties. He likewise joins works of beneficence, desires the priest to relieve the distressed, and to build houses for the accommodation of strangers of whatever religion; and says, it is a disgrace for Pagans to disregard those of their own religion, while Christians do kind offices to strangers and enemies. This is indeed an eminent instance of the happy influence of Christianity even on the sentiments and manners of those who regarded the Christian name with abhorrence.

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Christi-
nity to be
preferred
to all other
religions.

Upon the whole then, may we not, from the particulars here exhibited concerning the influence of this religion on the manners and happiness of men in society, conclude that Christianity is infinitely superior to the superstitions of Paganism? as being in its tendency uniformly favourable to the virtue and the happiness of mankind, and even to the system of religion and laws delivered by Moses to the children of Israel: because, while the religion of the Jews was calculated only for one particular nation, and it may almost be said for one particular stage in the progress of society, Christianity is an universal religion, formed to exert its happy influence in all ages and among all nations; and has a tendency to dispel the shades of barbarism and ignorance, to promote the cultivation of the powers of the human understanding, and to encourage every virtuous refinement of manners.

53
View of
Mahome-
tanism.

V. Another religion, which has made and still makes a conspicuous figure in the world remains yet to be examined. The religion of Mahomet is that which we here allude to. Whether we consider through what an extensive part of the globe that religion prevails, the political importance of the nations among whom it is professed, or the striking peculiarity of character by which it is distinguished from all other religious systems—it is for all these reasons well worthy of particular notice. Like the Jewish religion, it is not barely a system of religious doctrines and general moral precepts; it forms both the civil legislature and the religious system of those nations among whom it is professed; and, like it too, it would appear to be calculated rather for one particular period in the progress of mankind from rudeness to refinement, than for all ages and all states of society.

The history of its origin is pretty well known, and we have had occasion to enlarge upon it under a former article (see MAHOMET and MAHOMETANISM). We are not here to trace the impostures of the prophet, or to consider the arts by which he so successfully accomplished his designs; but merely to consider the morality of his religion, and its influence on civil order and the happiness of society.

54
It is friend-
ly to igno-
rance, des-
potism, and
impurity.

If we view the state of the nations among whom it is established, we cannot hesitate a moment to declare it friendly to ignorance, to despotism, and to impurity of manners. The Turks, the Persians, and the Malays, are all Mahometans; and in reviewing their history and considering their present state, we might find a sufficient number of facts to justify the above assertion: and we must not neglect to observe, that, as those nations are not known to have ever been since their conversion to Mahometanism under a much happier government, or in a much more civilized state than at present, it cannot be, with any degree of fairness, argued, with respect to Mahometanism as with respect to Christiani-

ty, that it is only when its influence is so opposed by other causes as to prevent it from producing its full effects, that it does not conduct those societies among which it is established to an high state of civilization and refinement.

55
Remarks
on the Ko-
ran, &c.

One, and that by no means an inconsiderable, part of the Koran, was occasionally invented to solve some difficulty with which the prophet found himself at the time perplexed, or to help him to the gratification of his ruling passions, lust and ambition. When he and his followers were, at any time, unsuccessful in those wars by which he sought to propagate his religion, to prevent them from falling away into unbelief, or sinking into despondency, he took care to inform them that God suffered such misfortunes to befall believers, as a punishment for their sins, and to try their faith. The doctrine of predestination, which he assiduously inculcated, had an happy effect to persuade his followers to rush boldly into the midst of death and danger at his command. He prevailed with Zeyd to put away his wife, married her himself, and pretended that his crime had the approbation of heaven; and, in the Koran, he introduces the Deity approving of this marriage. Being repulsed from the siege of Mecca, he made a league with the inhabitants; but on the very next year, finding it convenient to surprise the city, by violating this treaty, he justified his perfidy by teaching his followers to disregard promises or leagues made with infidels. In some instances again, we find absurd prohibitions enjoined for similar reasons: his officers, having on some occasion drunk to excess, excited much riot and confusion in the camp, he prohibited the use of wine and other inebriating liquors among his followers in future. Now, though it must be acknowledged that many evils arise from the use of these liquors, yet we cannot but think that, when used in moderation, they are in many cases beneficial to men; and certainly as much allowed by God as opium, which the Mahometans have substituted in their place.

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Mahome-
tanism a
mixture of
Christiani-
ty, Ju-
daism, and
the super-
stitions of
Arabia.

Mahomet is allowed to have copied from the Christian and the Jewish religions, as well as from the idolatrous superstitions which prevailed through Arabia, and thus to have formed a motley mixture of reason and absurdity, of pure theism and wild superstition. He considered also the circumstances of his country, and the prejudices of his countrymen. When he attended to the former, he was generally judicious enough to suit his doctrines and decisions to them with sufficient skill; the latter he also managed with the greatest art: but he entered into accommodation with them in instances when a true prophet or a wise and upright legislator would surely have opposed them with decisive vigour. Where the prophet indulges his own fancy, or borrows from the superstitions of his countrymen, nothing can be more ridiculous than that rhapsody of lies, contradictions, and extravagant fables, which he delivers to his followers. Amazing are the absurdities which he relates concerning the patriarchs, concerning Solomon, and concerning the animals that were assembled in Noah's ark.

57
Notion of
heaven and
hell.

But in the whole tissue of absurdities of which his system consists, there is nothing more absurd, or more happily calculated to promote impurity of manners, than his descriptions of heaven and hell; the ideas of future rewards and punishments which he sought to impress

on

Religion. on the minds of his followers. Paradise was to abound with rivers, trees, fruits; and shady groves; wine which would not intoxicate was to be there plentifully served up to believers; the inhabitants of that happy region were all to enjoy perpetual youth; and their powers of enjoyment were to be enlarged and invigorated, in order that so many fine things might not be thrown away upon them. "Instead of inspiring the blessed inhabitants of paradise with a liberal taste for harmony and science, conversation, and friendship (says Mr Gibbon), Mahomet idly celebrates the pearls and diamonds, the robes of silk, palaces of marble, dishes of gold, rich wines, artificial dainties, numerous attendants, and the whole train of sensual luxury.—Seventy two hours, or black-eyed girls of resplendent beauty, blooming youth, virgin purity, and exquisite sensibility, will be created for the use of the meanest believer; a moment of pleasure will be prolonged for 1000 years, and his faculties will be increased 100 fold, to render him worthy of his felicity." It must be acknowledged that he allows believers other more refined enjoyments than these; thus they are to see the face of God morning and evening; a pleasure which is far to exceed all the other pleasures of paradise. The following is his description of the punishments of hell: The wicked are there to drink nothing but boiling stinking water; breathe nothing but hot winds; dwell for ever in continual burning fire and smoke; eat nothing but briars and thorns, and the fruit of a tree that riseth out of the bottom of hell, whose branches resemble the heads of devils, and whose fruits shall be in their bellies like burning pitch.

All that we can conclude from a general view of the religion of Mahomet, from considering the character of the prophet, or from reviewing the history of the nations among whom it has been established, is, that it is one tissue of absurdities, with a few truths, however, and valuable precepts incongruously intermixed; that a great part of it is unfavourable to virtuous manners, to wife and equal laws, and to the progress of knowledge and refinement. It often inculcates in a direct manner sentiments that are highly immoral; it substitutes trifling, superstitious observances in the room of genuine piety and moral virtue; and it gives such views of futurity as render purity of heart no necessary qualification for seeing God.

58 Surely, therefore, even the deist, who rejects all but natural religion, would not hesitate to prefer Christianity, and even Judaism, to the religion of Mahomet. Judaism, calculated for a peculiar people, was undoubtedly much more sublime and much more happily framed to render that people virtuous and happy in the circumstances in which they were placed; and Christianity we find to be an universal religion, suited to all circumstances and to all the stages of society, and acting, wherever it is received, with more or less force to the support of civil order, virtuous manners, improvement of arts, and the advancement of science. However, as Mahometanism forms in some measure a regular system, as it has borrowed many of the precepts and doctrines of Judaism and Christianity, not indeed without corrupting and degrading them; and as it has contributed considerably to the support of civil government, although in a very imperfect form, in those countries in which it has obtained an establishment; for all these

58 Mahometanism to be preferred to paganism.

reasons we cannot but give it the preference to the superstitions of Paganism.

Religion
||
Rembrandt
59
Conclusion.

THE whole result of our inquiries under this article, therefore, is, 1. That as man, by the constitution of his mind, is naturally fitted for acquiring certain notions concerning the existence of invisible, superior beings, and their influence on human life; so the religious ideas which we find to have in all ages of the world, and in all the different stages of the progress of society, prevailed among mankind, appear to have originated partly from the natural exertions of the human imagination, understanding, and passions, in various circumstances, and partly from supernatural revelation.

2. That though religious opinions, together with the moral precepts, and the rites of worship connected with them, may appear to have been in numerous instances injurious to the virtue and happiness of society; yet, as they have often contributed to lead the mind to form moral distinctions, when it would otherwise in all probability have been an entire stranger to such distinctions; and as they have always contributed in an essential manner to the establishment and the support of civil government—it must therefore be acknowledged that they have always, even in their humblest state, been more beneficial than hurtful to mankind.

3. That when the different systems of religion that have prevailed in the world are comparatively viewed with respect to their influence on the welfare of society, we find reason to prefer the polytheism of the Greeks and Romans to the ruder, wilder, religious ideas and ceremonies that have prevailed among savages; Mahometanism, perhaps in some respects, to the polytheism of the Greeks and Romans; Judaism however to Mahometanism; and Christianity to all of them.

RELIGIOUS, in a general sense, something that relates to religion.—We say, a religious life, religious society, &c.—Churches and church-yards are religious places.—A religious war is also called a *croisade*. See **CROISADE**.

RELIGIOUS, is also used substantially for a person engaged by solemn vows to the monastic life; or a person shut up in a monastery to lead a life of devotion and austerity, under some rule or institution. The male religious we popularly call *monks* and *friars*; the female, *nuns* and *canonesses*.

REMBRANDT (Van Rhin), a Flemish painter and engraver of great eminence, was born in 1606, in a mill upon the banks of the Rhine, from whence he derived his name of *Van Rbin*. This master was born with a creative genius; which never attained perfection. It was said of him, that he would have invented painting, if he had not found it already discovered. Without study, without the assistance of any master, but by his own instinct, he formed rules, and a certain practical method for colouring; and the mixture produced the designed effect. Nature is not set off to the greatest advantage in his pictures; but there is such a striking truth and simplicity in them, that his heads, particularly his portraits, seem animated, and rising from the canvas. He was fond of strong contrasts of light and shade. The light entered in his working-room only by a hole, in the manner of a camera obscura, by which he judged with greater certainty of his productions. This artist considered painting like the stage, where

Rembrandt where the characters do not strike unless they are exaggerated. He did not pursue the method of the Flemish painters of finishing his pieces. He sometimes gave his light such thick touches, that it seemed more like modelling than painting. A head of his has been shown, the nose of which was so thick of paint, as that which he copied from nature. He was told one day, that by his peculiar method of employing colours, his pieces appeared rugged and uneven—he replied, he was a painter, and not a dyer. He took a pleasure in dressing his figures in an extraordinary manner: with this view he had collected a great number of eastern caps, ancient armour, and drapery long since out of fashion. When he was advised to consult antiquity to attain a better taste in drawing, as his was usually heavy and uneven, he took his counsellor to the closet where these old vestments were deposited, saying, by way of derision, those were his antiques.

Rembrandt, like most men of genius, had many caprices. Being one day at work, painting a whole family in a single picture, word being brought him that his monkey was dead, he was so affected at the loss of this animal, that, without paying any attention to the persons who were sitting for their pictures, he painted the monkey upon the same canvas. This whim could not fail of displeasing those the piece was designed for; but he would not efface it, choosing rather to lose the sale of his picture.

This freak will appear still more extraordinary in Rembrandt, when it is considered that he was extremely avaricious; which vice daily grew upon him. He practised various stratagems to sell his prints at a high price. The public were very desirous of purchasing them, and not without reason. In his prints the same taste prevails as in his pictures; they are rough and irregular, but picturesque. In order to heighten the value of his prints, and increase their price, he made his son sell them as if he had purloined them from his father; others he exposed at public sales, and went thither himself in disguise to bid for them; sometimes he gave out that he was going to leave Holland, and settle in another country. These stratagems were successful, and he got his own price for his prints. At other times he would print his plates half finished, and expose them to sale; he afterwards finished them, and they became fresh plates. When they wanted retouching, he made some alterations in them, which promoted the sale of his prints a third time, though they differed but little from the first impressions.

His pupils, who were not ignorant of his avarice, one day painted some pieces of money upon cards; and Rembrandt no sooner saw them, than he was going to take them up. He was not angry at the pleasantry, but his avarice still prevailed. He died in 1674.

REMEMBRANCE, is when the idea of something formerly known recurs again to the mind without the operation of a like object on the external sensory. See MEMORY and REMINISCENCE.

REMEMBRANCERS, anciently called *clerks of the remembrance*, certain officers in the exchequer, whereof three are distinguished by the names of the *king's remembrancer*, the *lord treasurer's remembrancer*, and the *remembrancer of the first fruits*. The king's remembrancer enters in his office all recognizances taken before the barons for any of the king's debts, for appearances or observing

of orders; he also takes all bonds for the king's debts, &c. and makes out processes thereon. He likewise issues processes against the collectors of the customs, excise, and others, for their accounts; and informations upon penal statutes are entered and sued in his office, where all proceedings in matters upon English bills in the exchequer-chamber remain. His duty further is to make out the bills of compositions upon penal laws, to take the statement of debts; and into his office are delivered all kinds of indentures and other evidences which concern the assuring any lands to the crown. He every year in *crastino animarum* reads in open court the statute for election of sheriffs; and likewise openly reads in court the oaths of all the officers, when they are admitted.

The lord treasurer's remembrancer is charged to make out process against all sheriffs, escheators, receivers, and bailiffs, for their accounts. He also makes out writs of *fieri facias*, and extent for debts due to the king, either in the pipe or with the auditors; and process for all such revenue as is due to the king on account of his tenures. He takes the account of sheriffs; and also keeps a record, by which it appears whether the sheriffs or other accountants pay their proffers due at Easter and Michaelmas; and at the same time he makes a record, whereby the sheriffs or other accountants keep their prefixed days: there are likewise brought into his office all the accounts of customers, comptrollers, and accountants, in order to make entry thereof on record; also all estreats and amercements are certified here, &c.

The remembrancer of the first-fruits takes all compositions and bonds for the payment of first-fruits and tenths; and makes out process against such as do not pay the same.

REMINISCENCE, that power of the human mind, whereby it recollects itself, or calls again into its remembrance such ideas or notions as it had really forgot: in which it differs from memory, which is a treasuring up of things in the mind, and keeping them there, without forgetting them.

REMISSION, in physics, the abatement of the power or efficacy of any quality; in opposition to the *increase* of the same, which is called *intension*.

REMISSION, in law, &c. denotes the pardon of a crime, or the giving up the punishment due thereto.

REMISSION, in medicine, is when a distemper abates for a time, but does not go quite off.

REMITTANCE, in commerce, the traffick or return of money from one place to another, by bills of exchange, orders, or the like.

REMONSTRANCE, an expostulation or humble supplication, addressed to a king, or other superior, beseeching him to reflect on the inconveniences or ill consequences of some order, edict, or the like. This word is also used for an expostulatory counsel, or advice; or a gentle and handsome reproof, made either in general, or particular, to apprise of or correct some fault, &c.

REMORA, or SUCKING-FISH, a species of ECHENEIS. Many incredible things are related of this animal by the ancients; as that it had the power of stopping the largest and swiftest vessel in its course: and even to this day it is asserted by the fishermen in the Mediterranean, that it has a power of retarding the motion of their boats by attaching itself to them; for which

Rembrandt
Remem-
brancers.

Remem-
brancers
Remora.

Remorse, Remphan. which reason they kill it whenever they perceive this retardation. But in what manner the remora performs this, we have no account.

REMORSE, in its worst sense, means that pain or anguish which one feels after having committed some bad action. It also means tenderness, pity, or sympathetic sorrow. It is most generally used in a bad sense, and is applied to persons who feel compunction for some great crime, as murder and such like. Murders which have been committed with the utmost circumspection and secrecy, and the authors of which could never have been discovered by any human investigation, have been frequently unfolded by the remorse and confession of the perpetrators, and that too many years afterwards. Of this there are numerous instances, which are well authenticated, and which are so generally known that it is needless to relate them here. See REPENTANCE.

REMPHAN, an idol or Pagan god whom St Stephen says the Israelites worshipped in the wilderness as they passed from Egypt to the land of Promise: "Yea, ye took up the tabernacle of Moloch, and the star of your god REMPHAN; figures which ye made to worship them." That the martyr here quotes the following words of the prophet Amos, all commentators are agreed: "Ye have borne the tabernacle of your Moloch, and CHIUN your images, the star of your god, which ye made to yourselves." But if this coincidence between the Christian preacher and the Jewish prophet be admitted, it follows, that *Chiun* and *Remphan* are two names of one and the same deity. This is indeed farther evident from the LXX translators having substituted in their version the word *παῖσαν*, instead of *Chiun*, which we read in the Hebrew and English Bibles. But the question which still remains to be answered is, what god was worshipped by the name of *Remphan*, *Raiphan*, or *Chiun*? for about the other divinity here mentioned there is no dispute. See MOLOCH.

That *Chiun* or *Remphan* was an Egyptian divinity, cannot be questioned; for at the era of the *Exodus* the Hebrews must have been strangers to the idolatrous worship of all other nations; nor are they ever accused of any other than Egyptian idolatries during their 40 years wanderings in the wilderness, till towards the end of that period that they became infected by the Moabites with the worship of *Baal-peor*. That *Moloch*, *Molech*, *Melek*, or *Milcom*, in its original acceptation denotes a king or chief, is known to every oriental scholar; and therefore when it is used as the name of a god, it undoubtedly signifies the sun, and is the same divinity with the Egyptian *Osiris*. Reasoning in this way many critics, and we believe Selden is in the number, have concluded that *Chiun*, and of course *Remphan*, is the planet Saturn; because *Chiun* is written *Ciun*, *Cevan*, *Cewan*, *Chevvin*; all of which are modern oriental names of that planet.

But against this hypothesis insurmountable objections present themselves to our minds. It is universally allowed (see POLYTHEISM), that the first objects of idolatrous worship were the sun and moon, considered

as the king and queen of heaven. The fixed stars, indeed, and the planets, were afterwards gradually admitted into the Pagan rubric; but we may be sure that those would be first associated with the two prime luminaries which most resembled them in brightness, and were supposed to be most benignant to man. But the planet Saturn appears to the naked eye with so feeble a lustre, that, in the infancy of astronomy, it could not make such an impression on the mind as to excite that admiration which we must conceive to have always preceded planetary worship. It is to be observed, too, that by the Pagan writers of antiquity Saturn is constantly represented as a star of baleful influence. He is termed the *leaden planet*; the *planet of malevolent aspect*; the *dismal*, the *inhuman star*. That the Egyptians, at so early a period as that under consideration, should have adored as one of their greatest gods a planet obscure in its appearance, distant in its situation, and baleful in its influence, is wholly incredible.

There is, however, another star which they might naturally adore, and which we know they actually did adore, as one of their most beneficent gods, at a very early period. This is the *αἰγώνιον* or *αἰγίος* of the Greeks, the *canis* or *stella canicularis* of the Romans, and the *dog-star* of modern Europe. By the Egyptians it was called *Sothis* or *Soth*, which signifies *safety*, *beneficence*, *fecundity*; and it received this name, because making its appearance in the heavens at the very time when the Nile overflowed the country, it was supposed to regulate the inundation. On this account Plutarch (*Is. et Osir.*) tells us, they believed the soul of their illustrious benefactress *Isis* to have transmigrated into the star *Sothis*, which they therefore worshipped as the divinity which rendered their country fruitful. It made its appearance, too, on the first day of the month *Thoth* (A), which was the beginning of the Egyptian year, and as such celebrated with feasting and festivity; and being by much the brightest star in the heavens, Horopollo (*cap. 3.*) informs us it was considered as sovereign over the rest. A combination of so many important circumstances might have induced a people less superstitious than the Egyptians to pay divine homage to that glorious luminary, which was confounded with *Isis*, who had been long regarded with the highest veneration; and as *Isis* was the wife and sister of *Osiris*, and always associated with him, the star of *Isis* or *Remphan* was naturally associated with *Moloch*, the same with *Osiris*.

But it will be asked, how the star which by the Egyptians was called *Soth* or *Sothis* came to be worshipped by the Hebrews under the appellation of *Chiun* or *Remphan*? This is a very pertinent question, and we shall endeavour to answer it.

Every one knows that the pronunciation of oriental words is very uncertain; and that as the vowels were often omitted in writing, it is of very little importance to the meaning how they be supplied, provided we retain the radical consonants. The word *Chiun* may with equal propriety be written *Kiun*, *Kion*, or even *Kyon*, the

(A) This was the case at a very remote period; but it is otherwise at present, owing to the PRECESSION of the Equinoxes. See that article.

Remphan the Hebrew *jod* being convertible into the Greek *υ* or the Roman *y*; but the words *Cane*, *Cban*, *Kan*, or *Khan*, which are often diversified into *Ken*, *Kyn*, *Cohen*, *Caban*, signifying *Head*, *Chief*, *Prince*, *King*, &c. are diffused through a great part of Asia and Europe. In the Chinese language *Quin*, which signifies a *King*, is so similar to the word *Chiun* or *Khiun* under consideration, that no etymologist will hesitate to pronounce them of the same original and the same import. The word *Kan* or *Khan* is universally known to be an honorary title in Tartary; and *Kaian* or *Kain*, which is manifestly cognate of the word *Chiun* or *Kiun*, is, in the *Plhevi* or old Persian language, the epithet applied to the dynasty of princes which succeeded Cyrus the Great. Among the Scythians or ancient Tartars, *Ghiun* signifies the *Sun* and likewise the *day*; and *Kung*, *Kinung*, *Kun*, runs through all the dialects of the Gothic tongue, every where denoting a *chief* or *sovereign*. In the Syrian dialect, *Kon* signifies a *prince*; and hence the Almighty is styled (Gen. xiv. 19.) *Konab*, which is translated *possessor*, but might have, with perhaps more propriety, been rendered *Sovereign* of heaven and earth. In Hebrew, the word *Kaban* or *Kaben*, which is the very same with *Khan* or *Kan*, signifies either a *priest* or a *prince*; and in Egypt *Kon* was the name of the first Hercules or the *sun*. Hence the same word in composition denotes greatness, as *Can-obus* the great serpent; *Can-atthob*, the great *Thoth* or Mercury; *Can-osis*, the great *Osiris*.

From this deduction we would conclude, that the word, which is found in so many tongues, and always denotes *Chief*, *Prince*, *Sovereign*, is the very word *Chiun* which the Egyptians and Hebrews applied to *Sothis*, as being, in their conceptions, the chief or sovereign of all the stars. This will appear still more probable, when we have ascertained the import of the word *Remphan*, or, as the LXX have it, *Raiphan*.

Phan, the latter part of this word, is unquestionably the same with *Pan*, the most ancient of the Egyptian gods (see *PAN*). It is likewise a cognate of the Hebrew *Phanab*, conspexit, spectavit, vidit; and the radical word seems to be *PHAH*, which signifies sometimes the countenance, and sometimes *light*. Hence *Phaethon*, which is compounded of *pha* light, *eth* or *esh* fire, and *on* strength, came to be one of the names of the sun. *Rai*, which we commonly write *Rajah*, has long signified, among the Indians, a subordinate prince; and we know, that between India and Egypt there was a very early intercourse. *Raiphan*, therefore, may be either the *royal light* or the *bright prince*, subordinate to *Osiris*; and in either sense, it was a very proper epithet of *Sothis* in the Egyptian kalendar. The word *Rem* or *Rom*, again (for it is sometimes written *Remphan*, and sometimes *Rompha*), is no other than the Hebrew *רום* *Rum* "high, exalted." Hence *Remphan* is the *high* or *exalted light*, which *Sothis* certainly was.

For this etymological disquisition we are indebted to Dr Doig, the learned author of *Letters on the Savage State*, who has written a dissertation on *Chiun* and *Remphan*, of such value that we hope it will not be much longer withheld from the public. The ascertaining the identity of those names, and the god to which they belonged, is the least of its merit; for it will be found to throw much light upon many passages in the Old Testament. What confirms his interpretation is, that the

idol consecrated by the Egyptians to *Sothis* or the dog-star, was a female figure with a star on her head; and hence the prophet upbraids his countrymen with having borne the *Star* of their deity.

ACTION OF REMOVING, in Scots law. See LAW, N° clxvii. 18.

REMURIA, festivals established at Rome by Romulus to appease the manes of his brother Remus. They were afterwards called *Lemuria*, and celebrated yearly.

REMUS, the brother of Romulus, was exposed together with his brother by the cruelty of his grandfather. In the contest which happened between the two brothers about building a city, Romulus obtained the preference, and Remus, for ridiculing the rising walls, was put to death by his brother's orders, or by Romulus himself (see ROMULUS). The Romans were afflicted with a plague after this murder; upon which the oracle was consulted, and the manes of Remus appeased by the institution of the *Remuria*.

RENAL, something belonging to the reins or KIDNEYS.

RENCOUNTER, in the military art, the encounter of two little bodies or parties of forces. In which sense *rencounter* is used in opposition to a pitched battle.

RENCOUNTER, in single combats, is used by way of contradistinction to DUEL.—When two persons fall out and fight on the spot without having premeditated the combat, it is called a *rencounter*.

RENDEZVOUS, or RENDEVOUS, a place appointed to meet in at a certain day and hour.

RENEALMIA, in botany; a genus of the monogynia order, belonging to the monandria class of plants. The corolla is trisid; the nectarium oblong; the calyx monophyllous; the anthera sessile, opposite to the nectarium; the berry is fleshy. There is only one species, which is a native of Surinam.

RENEGADE, or RENEGADO, a person who has apostatized or renounced the Christian faith, to embrace some other religion, particularly Mahometanism.

RENFREW, the county-town of Renfrewshire, standing on the small river Cathcart, which flows into the Clyde at the distance of five miles from Glasgow, is a small but ancient royal borough, the seat of the sheriff's court and of a presbytery. The town is neatly built, and the inhabitants enjoy a tolerable share of commerce.—Renfrew was originally joined to Lanerk, but was made an independent sheriffdom by Robert II. who had a palace here. W. Long. 4. 26. N. Lat. 55. 51.

RENFREWSHIRE, a county of Scotland, styled by way of eminence the *barony*, because it was the ancient inheritance of the Stuarts, is a small county, extending about 20 miles from north to south, and 13 from east to west, parted from Dumbartonshire by the river Clyde on the west, bordering on the east with Lanerkshire, and on the north with Cunningham. The face of the country is varied with hill and vale, wood and stream; crowded with populous villages, and adorned with the seats of gentlemen. The soil is in general fertile, producing rye, barley, oats, pease, beans, flax, and some wheat: it likewise yields plenty of coal, and turf for fuel: and affords abundance of pasturage for sheep and cattle. The inhabitants are Lowlanders and Presbyterians; wealthy and industrious, addicted to traffic, and particularly expert in the linen manufacture.

Rennes
||
Repealing.

Their genius is stimulated to commerce, by the example of their neighbours of Glasgow, as well as the convenience of the river and frith of Clyde, along the course of which they are situated.

RENNES, a town of France, in Bretagne, and capital of that province. Before the revolution it had a bishop's see, two abbeys, a parliament, and a mint. It is very populous; the houses are six or seven stories high, and the suburbs of larger extent than the town itself. The cathedral church is large, and the parliament-house a handsome structure. The great square belonging to it is surrounded with handsome houses. There is a tower, formerly a pagan temple, which now contains the town-clock. It is seated on the river Vilaine, which divides it into two parts, and was anciently fortified, but the walls are now in ruins, and the ditch nearly filled up. The siege of the city by Edward III. king of England, is very celebrated in history. The English and Breton army consisted of 40,000 men; and nevertheless, after having remained before it six months, were obliged to retire without success. E. Long. 0. 23. N. Lat. 48. 7.

RENNET. See RUNNET.

RENT, in law, a sum of money, or other consideration, issuing yearly out of lands or tenements.

* Lettres
Edifiantes
et Curieuses

RENTING, in the manufactories, the same with fine-drawing. It consists in sewing two pieces of cloth edge to edge, without doubling them, so that the seam scarce appears; and hence it is denominated *fine-drawing*. It is a French word meaning the same thing, and is derived from the Latin *retrahere*, or *re, in, and trahere*, because the seam is drawn in or covered. We are told*, that in the East Indies, if a piece of fine muslin be torn and afterwards mended by the fine-drawers, it will be impossible to discover where the rent was. In this country the dexterity of the fine-drawers is not so great as that of those in the east; but it is still such as to enable them to defraud the revenue, by sewing a head or slip of English cloth on a piece of Dutch, Spanish, or other foreign cloth: or a slip of foreign cloth on a piece of English, so as to pass the whole as of a piece; and by that means avoid the duties, penalties, &c. The trick was first discovered in France by M. Savary.

RENTING, in tapestry, is the working new warp into a piece of damaged tapestry, whether eaten by the rats or otherwise destroyed, and on this warp to restore the ancient pattern or design. The warp is to be of woollen, not linen. Among the titles of the French tapestry makers is included that of renters. Fine-drawing is particularly used for a rent or hole, which happens in dressing or preparing a piece of cloth artfully sewed up or mended with silk. All fine-drawings are reckoned defects or blemishes; and should be allowed for in the price of the piece.

RENVERSE, INVERTED, in heraldry, is when any thing is set with the head downwards, or contrary to its natural way of standing. Thus, a chevron renversé, is a chevron with the point downwards. They use also the same term when a beast is laid on its back.

RENUNCIATION, the act of renouncing, abdicating, or relinquishing, any right, real or pretended.

REPARTEE, a smart, ready reply, especially in matters of wit, humour, or raillery. See RAILLERY.

REPEALING, in law, the revoking or annulling of a statute or the like.

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No act of parliament shall be repealed the same session in which it was made. A deed or will may be repealed in part, and stand good for the rest. It is held that a pardon of felony may be repealed on disproving the suggestion thereof.

REPELLENTS, in medicine, remedies which drive back a morbid humour into the mass of blood, from whence it was unduly secreted.

REPENTANCE, in general, means sorrow for any thing past. In theology it means such a sorrow for sin as produces newness of life, or such a conviction of the evil and danger of a sinful course as is sufficient to produce shame and sorrow in the review of it, and effectual resolutions of amendment. In this sense the evangelical writers use *μεταμέλεια* and *μετανοια*. See PENITENCE and THEOLOGY.

REPERCUSSION, in music, a frequent repetition of the same sound.

REPERTORY, a place wherein things are orderly disposed, so as to be easily found when wanted. The indices of books are repertories, showing where the matters sought for are treated of. Common-place books are also kinds of repertories.

REPETITION, the reiterating of an action.

REPETITION, in music, denotes a reiterating or playing over again the same part of a composition, whether it be a whole strain, part of a strain, or double strain, &c.

When the song ends with a repetition of the first strain, or part of it, the repetition is denoted by *da capo*, or D. C. i. e. "from the beginning."

REPETITION, in rhetoric, a figure which gracefully and emphatically repeats either the same word, or the same sense in different words. See ORATORY, n° 67 — 80.

The nature and design of this figure is to make deep impressions on those we address. It expresses anger and indignation, full assurance of what we affirm, and a vehement concern for what we have espoused.

REPHIDIM (anc. geog.), a station of the Israelites near mount Horeb, where they murmured for want of water; when Moses was ordered to smite the rock Horeb, upon which it yielded water. Here Joshua defeated the Amalekites. This rock, out of which Moses brought water, is a stone of a prodigious height and thickness, rising out of the ground; on two sides of which are several holes, by which the water ran. (Thevenot.)

REPLEGIARE, in law, signifies to redeem a thing taken or detained by another, by putting in legal sureties.

DE HOMINE REPLEGIANDO. See HOMINE.

REPLEVIN, in law, a remedy granted on a distress, by which the first possessor has his goods restored to him again, on his giving security to the sheriff that he will pursue his action against the party distraining, and return the goods or cattle if the taking them shall be adjudged lawful.

In a replevin the person distrained becomes plaintiff; and the person distraining is called the *defendant* or *avowant*, and his justification an *avowry*.

At the common law replevins are by writ, either out of the king's-bench or common-pleas; but by statute, they are by plaint in the sheriff's court, and court-baron, for a person's more speedily obtaining the goods distrained.

L

If

Repellents
||
Replevin

Replevy
||
Reprieve.

If a plaint in replevin be removed into the court of king's bench, &c. and the plaintiff makes default and becomes non-suit, or judgment is given against him, the defendant in replevin shall have the writ of *retorno habendo* of the goods taken in distress. See the next article.

REPLEVY, in law, is a tenant's bringing a writ of replevin, or *replegiari facias*, where his goods are taken by distress for rent; which must be done within five days after the distress, otherwise at the five days end they are to be appraised and sold.

This word is also used for bailing a person, as in the case of a *hmine replegiando*.

REPORT, the relation made upon oath, by officers or persons appointed to visit, examine, or estimate the state, expences, &c. of any thing.

REPORT, in law, is a public relation of cases judicially argued, debated, resolved, or adjudged in any of the king's courts of justice, with the causes and reasons of the same, as delivered by the judges. Also when the court of chancery, or any other court, refers the stating of a case, or the comparing of an account, to a master of chancery, or other referee, his certificate thereon is called a *report*.

REPOSE, in poetry, &c. the same with rest and pause. See REST, &c.

REPOSE, in painting, certain masses or large assemblages of light and shade, which being well conducted, prevent the confusion of objects and figures, by engaging and fixing the eye so as it cannot attend to the other parts of the painting for some time; and thus leading it to consider the several groups gradually, proceeding as it were from stage to stage.

REPRESENTATION, in the drama, the exhibition of a theatrical piece, together with the scenes, machinery, &c.

REPRESENTATIVE, one who personates or supplies the place of another, and is invested with his right and authority. Thus the house of commons are the representatives of the people in parliament. See COMMONS and PARLIAMENT.

REPRIEVE, in criminal law (from *repandre*, "to take back"), is the withdrawing of a sentence for an interval of time; whereby the execution is suspended. See JUDGMENT.

Blackst.
Comment.

This may be, first, *ex arbitrio judicis*, either before or after judgment: as, where the judge is not satisfied with the verdict, or the evidence is suspicious, or the indictment is insufficient, or he is doubtful whether the offence be within clergy; or sometimes if it be a small felony, or any favourable circumstances appear in the criminal's character, in order to give room to apply to the crown for either an absolute or conditional pardon. These arbitrary reprieves may be granted or taken off by the justices of gaol-delivery, although their session be finished, and their commission expired: but this rather by common usage than of strict right.

Reprieves may also be *ex necessitate legis*: as where a woman is capitally convicted, and pleads her pregnancy. Though this is no cause to stay judgment, yet it is to respite the execution till she be delivered. This is a mercy dictated by the law of nature, *in favorem proli*; and therefore no part of the bloody proceedings in the reign of Queen Mary hath been more justly detested, than the cruelty that was exercised in the island of

Guernsey, of burning a woman big with child; and, when through the violence of the flames the infant sprang forth at the stake, and was preserved by the bystanders, after some deliberations of the priests who assisted at the sacrifice, they cast it into the fire as a young heretic. A barbarity which they never learned from the laws of ancient Rome; which direct, with the same humanity as our own, *quod pregnantis mulieris damnata pena differatur, quoad pariat*: which doctrine has also prevailed in England, as early as the first memorials of our law will reach. In case this plea be made in stay of execution, the judge must direct a jury of twelve matrons or discreet women to inquire into the fact: and if they bring in their verdict *quick with child* (for barely *with child*, unless it be alive in the womb, is not sufficient), execution shall be staid generally till the next session; and so from session to session, till either she is delivered, or proves by the course of nature not to have been with child at all. But if she once hath had the benefit of this reprieve, and been delivered, and afterwards becomes pregnant again, she shall not be intitled to the benefit of a farther respite for that cause. For she may now be executed before the child is quick in the womb; and shall not, by her own incontinence, evade the sentence of justice.

Another cause of regular reprieve is, if the offender become *non compos* between the judgment and the award of execution: for regularly, though a man be *compos* when he commits a capital crime, yet if he becomes *non compos* after, he shall not be indicted; if after indictment, he shall not be convicted; if after conviction, he shall not receive judgment; if after judgment, he shall not be ordered for execution: for *furiosus solo furore punitur*; and the law knows not but he might have offered some reason, if in his senses, to have stayed these respective proceedings. It is therefore an invariable rule, when any time intervenes between the attainder and the award of execution, to demand of the prisoner what he hath to allege why execution should not be awarded against him; and, if he appears to be insane, the judge in his discretion may and ought to reprieve him. Or, the party may plead in bar of execution; which plea may be either pregnancy, the king's pardon, an act of grace, or diversity of person, *viz.* that he is not the same that was attainted, and the like. In this last case a jury shall be impanelled to try this collateral issue, namely, the identity of his person; and not whether guilty or innocent, for that has been decided before. And in these collateral issues the trial shall be *instant*; and no time allowed the prisoner to make his defence or produce his witnesses, unless he will make oath that he is not the person attainted: neither shall any peremptory challenges of the jury be allowed the prisoner, though formerly such challenges were held to be allowable whenever a man's life was in question. If neither pregnancy, insanity, non-identity, nor other plea, will avail to avoid the judgment, and stay the execution consequent thereupon, the last and surest resort is in the king's most gracious pardon; the granting of which is the most amiable prerogative of the crown. See the article PARDON.

REPRISALS, a right which princes claim of taking from their enemies any thing equivalent to what they unjustly detain from them or their subjects. For as the delay of making war may sometimes be detrimental

Reprieve,
Reprisals.

Reprisals.
Bl. cl. ff.
Comment.

mental to individuals who have suffered by depredations from foreign potentates, our laws have in some respects armed the subject with powers to impel the prerogative; by directing the ministers of the crown to issue letters of marque and reprisal upon due demand: the prerogative of granting which is nearly related to, and plainly derived from, that other of making war; this being indeed only an incomplete state of hostilities, and generally ending in a formal denunciation of war. These letters are grantable by the law of nations, whenever the subjects of one state are oppressed and injured by those of another; and justice is denied by that state to which the oppressor belongs. In this case letters of marque and reprisal (words used as synonymous; and signifying, the latter a taking in return, the former the passing the frontiers in order to such taking) may be obtained, in order to seize the bodies or goods of the subjects of the offending state, until satisfaction be made, wherever they happen to be found. And indeed this custom of reprisals seems dictated by nature herself; for which reason we find in the most ancient times very notable instances of it. But here the necessity is obvious of calling in the sovereign power, to determine when reprisals may be made; else every private sufferer would be a judge in his own cause. In pursuance of which principle, it is with us declared by the stat. 4 Hen. V. c. 7. that, if any subjects of the realm are oppressed in time of truce by any foreigners, the king will grant marque in due form, to all that feel themselves grieved. Which form is thus directed to be observed: the sufferer must first apply to the lord privy-seal, and he shall make out letters of request under the privy-seal; and if after such request of satisfaction made, the party required do not within convenient time make due satisfaction or restitution to the party grieved, the lord-chancellor shall make him out letters of marque under the great seal; and by virtue of these he may attack and seize the property of the aggressor nation, without hazard of being condemned as a robber or pirate.

REPRISAL, or *Recaption*, is a species of remedy allowed to an injured person. This happens when any one hath deprived another of his property in goods or chattels personal, or wrongfully detains one's wife, child, or servant: in which case the owner of the goods, and the husband, parent, or master, may lawfully claim and retake them, wherever he happens to find them; so it be not in a riotous manner, or attended with a breach of the peace. The reason for this is obvious; since it may frequently happen that the owner may have this only opportunity of doing himself justice: his goods may be afterwards conveyed away or destroyed; and his wife, children, or servants, concealed or carried out of his reach; if he had no speedier remedy than the ordinary process of law. If therefore he can so contrive it as to gain possession of his property again, without force or terror, the law favours and will justify his proceeding. But, as the public peace is a superior consideration to any one man's private property; and as, if individuals were once allowed to use private force as a remedy for private injuries, all social justice must cease, the strong would give law to the weak, and every man would revert to a state of nature; for these reasons it is provided, that this natural right of recaption shall never be exerted, where such exertion must occasion strife and bodily contention, or endanger

the peace of society. If, for instance, my horse is taken away, and I find him in a common, a fair, or a public inn, I may lawfully seize him to my own use: but I cannot justify breaking open a private stable, or entering on the grounds of a third person, to take him, except he be feloniously stolen; but must have recourse to an action at law.

REPROBATION, in theology, means the act of abandoning, or state of being abandoned, to eternal destruction, and is applied to that decree or resolve which God has taken from all eternity to punish sinners who shall die in impenitence; in which sense it is directly opposed to election. When a sinner is so hardened as to feel no remorse or misgiving of conscience, it is considered as a sign of reprobation; which by the casuists has been distinguished into positive and negative. The first is that whereby God is supposed to create men with a positive and absolute resolution to damn them eternally. This opinion is countenanced by St Augustine and other Christian fathers, and is a peculiar tenet of Calvin and most of his followers. The church of England, in *The thirty-nine Articles*, teaches something like it; and the church of Scotland, in the *Confession of Faith*, maintains it in the strongest terms. But the notion is generally exploded, and is believed by no rational divine in either church, being totally injurious to the justice of the Deity. Negative or conditional reprobation is that whereby God, though he has a sincere desire to save men, and furnishes them with the necessary means, so that all if they will may be saved, yet sees that there are many who will not be saved by the means, however powerful, that are afforded them; tho' by other means which the Deity sees, but will not afford them, they might be saved. Reprobation respects angels as well as men, and respects the latter either fallen or unfallen. See PREDESTINATION.

REPRODUCTION, is usually understood to mean the restoration of a thing before existing, and since destroyed. It is very well known that trees and plants may be raised from slips and cuttings; and some late observations have shown, that there are some animals which have the same property. The polype* was the first instance we had of this; but we had scarce time to wonder at the discovery Mr Trembley had made, when Mr Bonett discovered the same property in a species of water-worm. Amongst the plants which may be raised from cuttings, there are some which seem to possess this quality in so eminent a degree, that the smallest portion of them will become a complete tree again.

It deserves inquiry, whether or not the great Author of nature, when he ordained that certain insects, as these polypes and worms, should resemble those plants in that particular, allowed them this power of being reproduced in the same degree? or, which is the same thing, whether this reproduction will or will not take place in whatever part the worm is cut? In order to try this, Mr Bonett entered on a course of many experiments on the water-worms which have this property. These are, at their common growth, from two to three inches long, and of a brownish colour, with a cast of reddish. From one of these worms he cut off the head and tail, taking from each extremity only a small piece of a twelfth of an inch in length; but neither of these pieces were able to reproduce what was wanting. They both perished in about 24 hours; the tail first,

Reprobation,
Reproduction.

* See Polype.

Reproduc-
tion.

and afterwards the head. As to the body of the worm from which these pieces were separated, it lived as well as before, and seemed indeed to suffer nothing by the loss, the head-part being immediately used as if the head was thereon, boring the creature's way into the mud. There are, besides this, two other points in which the reproduction will not take place; the one of these is about the fifth or sixth ring from the head, and the other at the same distance from the tail; and in all probability the condition of the great artery in these parts is the cause of this.

What is said of the want of the reproductive power of these parts relates only to the head and tail ends; for as to the body, it feels very little inconvenience from the loss of what is taken off, and very speedily reproduces those parts. Where then does the principle of life reside in such worms, which, after having their heads cut off, will have not only the same motions, but even the inclinations, that they had before? and yet this difficulty is very small, compared to several others which at the same time offer themselves to our reason. Is this wonderful reproduction of parts only a natural consequence of the laws of motion? or is there lodged in the body of the creature a chain of minute buds or shoots, a sort of little embryos, already formed and placed in such parts where the reproductions are to begin? Are these worms only mere machines? or are they, like more perfect animals, a sort of compound, the springs of whose motions are actuated or regulated by a sort of soul? And if they have themselves such a principle, how is it that this principle is multiplied, and is found in every separate piece? Is it to be granted, that there are in these worms, not a single soul (if it is to be so called) in each, but that each contains as many souls as there are pieces capable of reproducing perfect animals? Are we to believe with Malpighi, that these sorts of worms are all heart and brain from one end to the other! This may be; but yet if we knew that it was so, we should know in reality but very little the more for knowing it: and it seems, after all, that in cases of this kind we are only to admire the works of the great Creator, and sit down in silence.

The nice sense of feeling in spiders has been much talked of by naturalists; but it appears that these worms have yet somewhat more surprising in them in regard to this particular. If a piece of stick, or any other substance, be brought near them, they do not stay for its touching them, but begin to leap and frisk about as soon as it comes towards them. There want, however, some farther experiments to ascertain whether this be really owing to feeling or to sight; for though we can discover no distinct organs of sight in these creatures, yet they seem affected by the light of the sun or a candle, and always frisk about it in the same manner at the approach of either; nay, even the moon-light has some effect upon them.

A twig of willow, poplar, or many other trees, being planted in the earth, takes root, and becomes a tree, every piece of which will in the same manner produce other trees. The case is the same with these worms: they are cut to pieces, and these several pieces become perfect animals; and each of these may be again cut into a number of pieces, each of which will in the same manner produce an animal. It had been supposed by some that these worms were oviparous: but Mr Bo-

nett, on cutting one of them to pieces, having observed a slender substance, resembling a small filament, to move at the end of one of the pieces, separated it; and on examining it with glasses, found it to be a perfect worm, of the same form with its parent, which lived and grew larger in a vessel of water into which he put it. These small bodies are easily divided, and very readily complete themselves again, a day usually serving for the production of a head to the part that wants one; and, in general, the smaller and slenderer the worms are, the sooner they complete themselves after this operation. When the bodies of the large worms are examined by the microscope, it is very easy to see the appearance of the young worms alive, and moving about within them: but it requires great precision and exactness to be certain of this; since the ramifications of the great artery have very much the appearance of young worms, and they are kept in a sort of continual motion by the systoles and diastoles of the several portions of the artery, which serve as so many hearts. It is very certain, that what we force in regard to these animals by our operations, is done also naturally every day in the brooks and ditches where they live. A curious observer will find in these places many of them without heads or tails, and some without either; as also other fragments of various kinds, all which are then in the act of completing themselves: but whether accidents have reduced them to this state, or they thus purposely throw off parts of their own body for the reproduction of more animals, it is not easy to determine. They are plainly liable to many accidents, by which they lose the several parts of their body, and must perish very early if they had not a power of reproducing what was lost: they often are broken into two pieces, by the resistance of some hard piece of mud which they enter; and they are subject to a disease, a kind of gangrene, rotting off the several parts of their bodies, and must inevitably perish by it, had they not this surprising property.

This worm was a second instance, after the polype, of the surprising power in an animal of recovering its most essential parts when lost. But Nature does not seem to have limited her beneficence in this respect to these two creatures. Mr Bonett tried the same experiments on another species of water-worm, differing from the former in being much thicker. This kind of worm, when divided in the summer-season, very often shows the same property: for if it be cut into three or four pieces, the pieces will lie like dead for a long time, but afterwards will move about again; and will be found in this state of rest to have recovered a head, or a tail, or both. After recovering their parts, they move very little; and, according to this gentleman's experiments, seldom live more than a month.

It should seem, that the more difficult success of this last kind of worm, after cutting, and the long time it takes to recover the lost parts, if it do recover them at all, is owing to its thickness; since we always find in that species of worms which succeeds best of all, that those which are thinnest always recover their parts much sooner than the others.

The water-insects also are not the only creatures which have this power of recovering their lost parts. The earth affords us some already discovered to grow in this manner from their cuttings, and these not less deserving our admiration than those of the water: the common

Reproduc-
tion.

Reproduction. common earth-worms are of this kind. Some of these worms have been divided into two, others into three or four pieces; and some of these pieces, after having passed two or three months without any appearance of life or motion, have then begun to reproduce a head or tail or both. The reproduction of the anus, after such a state of rest, is no long work; a few days do it: but it is otherwise with the head, that does not seem to perform its functions in the divided pieces till about seven months after the separation. It is to be observed, that in all these operations both on earth and water-worms, the hinder part suffers greatly more than the fore part in the cutting; for it always twists itself about a long time, as if actuated by strong convulsions; whereas the head usually crawls away without the appearance of any great uneasiness.

The reproduction of several parts of lobsters, crabs, &c. makes also one of the great curiosities in natural history. That, in lieu of an organical part of an animal broken off, another shall rise perfectly like it, may seem inconsistent with the modern system of generation, where the animal is supposed to be wholly formed in the egg. Yet has the matter of fact been well attested by the fishermen, and even by several virtuosos who have taken the point into examination, particularly M. de Reaumur and M. Perrault, whose skill and exactness in things of this nature will hardly be questioned. The legs of lobsters, &c. consist each of five articulations; now, when any of the legs happen to break by any accident, as in walking, &c. which frequently happens, the fracture is always found to be in a part near the fourth articulation; and what they thus lose is precisely reproduced some time afterwards; that is, a part of a leg shoots out, consisting of four articulations, the first whereof has two claws as before; so that the loss is entirely repaired.

If a lobster's leg be broken off by design at the fourth or fifth articulation, what is thus broken off always comes again; but it is not so if the fracture be made in the first, second, or third articulation. In those cases, the reproduction is very rare if things continue as they are. But what is exceedingly surprising is, that they do not; for, upon visiting the lobster maimed in these barren and unhappy articulations, at the end of two or three days, all the other articulations are found broken off to the fourth; and it is suspected they have performed the operation on themselves, to make the reproduction of a leg certain.

The part reproduced is not only perfectly like that retrenched, but also, in a certain space of time, grows equal to it. Hence it is that we frequently see lobsters, which have their two big legs unequal, and that in all proportions. This shows the smaller leg to be a new one.

A part thus reproduced being broken, there is a second reproduction. The summer, which is the only season of the year when the lobsters eat, is the most favourable time for the reproduction. It is then performed in four or five weeks; whereas it takes up eight or nine months in any other season. The small legs are sometimes reproduced, but more rarely, as well as more slowly, than the great ones: the horns do the same. The experiment is most easily tried on the common crab. See METAPHYSICS, p. 574. note (F); and PHYSIOLOGY, n° 261.

Reptiles *Reproduction.* REPTILES, in natural history, a kind of animals denominated from their creeping or advancing on the belly. Or reptiles are a genus of animals and insects, which, instead of feet, rest on one part of the body, while they advance forward with the rest. Such are earthworms, snakes, caterpillars, &c. Indeed, most of the class of reptiles have feet; only those very small, and the legs remarkably short in proportion to the bulk of the body.

Naturalists observe a world of artful contrivance for the motion of reptiles. Thus, particularly in the earthworm, Dr Willis tells us, the whole body is only a chain of annular muscles; or, as Dr Derham says, it is only one continued spiral muscle, the orbicular fibres whereof being contracted, render each ring narrower and longer than before; by which means it is enabled, like the worm of an augre, to bore its passage into the earth. Its reptile motion might also be explained by a wire wound on a cylinder, which when slipped off, and one end extended and held fast, will bring the other near to it. So the earthworm having shot out or extended his body (which is with a wreathing), it takes hold by these small feet it hath, and so contracts the hinder part of its body. Dr Tyson adds, that when the forepart of the body is stretched out, and applied to a plane at a distance, the hind part relaxing and shortening is easily drawn towards it as a centre.

Its feet are disposed in a quadruple row the whole length of the worm, with which, as with so many hooks, it fastens down sometimes this and sometimes that part of the body to the plane, and at the same time stretches out or drags after it another.

The creeping of serpents is effected after a somewhat different manner; there being a difference in their structure, in that these last have a campaign of bones articulated together.

The body here is not drawn together, but as it were complicated; part of it being applied on the rough ground, and the rest ejaculated and shot from it, which being set on the ground in its turn, brings the other after it. The spine of the back variously wreathed has the same effect in leaping, as the joints in the feet of other animals; they make their leaps by means of muscles, and extend the plicæ or folds. See ZOOLOGY.

REPUBLIC, or commonwealth, a popular state or government; or a nation where the people have the government in their own hands. See GOVERNMENT, ARISTOCRACY, DEMOCRACY, and MONARCHY.

REPUBLIC of Letters, a phrase used collectively of the whole body of the studious and learned people.

REPUDIATION, in the civil law, the act of divorcing. See DIVORCE.

REPULSION, in physics, that property of bodies whereby they recede from each other, and, on certain occasions, mutually avoid coming into contact.

REPULSION, as well as attraction, has of late been considered as one of the primary qualities of all matter, and has been much used in explaining the phenomena of nature: thus the particles of air, fire, steam, electric fluid, &c. are all said to have a repulsive power with respect to one another.—That this is the case with the air, and vapour of all kinds, is certain; because when they are compressed into a small space, they expand with

Reputation,
Request.

with great force: but as to fire, light, and electricity, our experiments fail; nay, the supposition of a repulsive power among the particles of the electric fluid is inconsistent with the phenomena, as has been demonstrated under the article *ELECTRICITY*, Sect. V. and VI. Even in those fluids, air and steam, where a repulsive power most manifestly exists, it is demonstrable that the repulsion cannot be a *primary* quality, since it can be increased to a great degree by heat, and diminished by cold: but it is impossible that a *primary* quality of matter can be increased or diminished by any external circumstances whatever; for whatever property depends upon external circumstances, is not a primary but a secondary one.—The repulsion of electrified bodies is explained under the article *ELECTRICITY*: that of others is less subject to investigation; and the most that can be said concerning it is, that in many cases it seems to be the consequence of a modification of fire, and in others of electricity.

REPUTATION means credit, honour, or the character of good; and since we are destined to live in society, is necessary and useful more or less to every human being. There is no man, except one who is overgrown with pride and self-conceit, or whose actions are bad, but pays attention to his reputation, and wishes to possess the good opinion of his neighbours or the world. The love of reputation and of fame are most powerful springs of action; but though they proceed from the same principle, the means of attaining them, and the effects of them, are not altogether the same.

Many means indeed serve equally to support the reputation and to increase the fame; differing only in degrees; others, however, belong peculiarly either to the one or to the other. An honest reputation is within the reach of the bulk of mankind; it is obtained by the social virtues and the constant practice of the common duties of life. This kind of reputation indeed is neither extensive nor brilliant, but it is often the most useful in point of happiness. Wit, talents, and genius, are the necessary requisites for fame; but those advantages are perhaps less real in their consequences than those arising from a good reputation. What is of real use costs little; things rare and splendid require the greatest labour to procure, and yield perhaps a more ideal happiness.

Fame can be possessed, comparatively speaking, but by few individuals; as it requires either very superior abilities, supported by great efforts, or very fortunate circumstances. It is constituted by the applause of mankind, or at least by that of a single nation; whilst reputation is of much less extent, and arises from different circumstances. That reputation which is founded on deceit and artifice is never solid; and the most honourable will always be found to be the most useful. Every one may safely, and indeed ought to, aspire to the consideration and praise due to his condition and merit; but he who aspires to more, or who seeks it by dishonest means, will at length meet with contempt.

REQUEST, in law, a supplication or petition preferred to a prince, or to a court of justice; begging relief in some conscionable cases where the common law grants no immediate redress.

Court of REQUESTS (*curia requisitionum*) was a court of equity, of the same nature with the court of chancery, but inferior to it; principally instituted for the relief of such petitioners as in conscionable cases addres-

sed themselves by supplication to his majesty. Of this court the lord privy-seal was chief judge, assisted by the masters of requests; and it had beginning about the 9th Hen. VII. according to Sir Julius Caesar's tractate upon this subject: though Mr Gwyn, in his preface to his Readings, saith it began from a commission first granted by king Henry VIII.—This court, having assumed great power to itself, so that it became burthensome, *Mich.* anno 40 and 41 *Eliz.* in the court of common-pleas it was adjudged upon solemn argument, that the court of requests was no court of judicature, &c. and by stat. 16 & 17 Car I. c. 10. it was taken away.

There are still courts of requests, or courts of conscience, constituted in London and other trading and populous districts for the recovery of small debts. The first of these was established in London so early as the reign of Henry VIII. by an act of their common council; which however was certainly insufficient for that purpose, and illegal, till confirmed by statute 3 Jac. I. c. 15. which has since been explained and amended by statute 14 Geo. II. c. 10. The constitution is this: two aldermen and four commoners sit twice a week to hear all causes of debt not exceeding the value of forty shillings; which they examine in a summary way, by the oath of the parties or other witnesses, and make such order therein as is consonant to equity and good conscience. The time and expence of obtaining this summary redress are very inconsiderable, which make it a great benefit to trade; and thereupon divers trading towns and other districts have obtained acts of parliament for establishing in them courts of conscience upon nearly the same plan as that in the city of London.

By 25 Geo. III. c. 45. (which is confined to prosecutions in courts of conscience in London, Middlesex, and the borough of Southwark), and by 26 Geo. III. c. 38. (which extends the provisions of the former act to all other courts instituted for the recovery of small debts), it is enacted, that after the first day of September 1786, no person whatsoever, being a debtor or defendant, and who has been or shall be committed to any gaol or prison by order of any court or commissioners authorized by any act or acts of parliament for constituting or regulating any court or courts for the recovery of small debts, where the debt does not exceed twenty shillings, shall be kept or continued in custody, on any pretence whatsoever, more than twenty days from the commencement of the last mentioned act; or from the time of his, her, or their commitment to prison: and where the original debt does not amount to or exceed the sum of forty shillings, more than forty days from the commencement of the said act, or from the time of his, her, or their commitment as aforesaid; and all gaolers are thereby required to discharge such persons accordingly. And by sect. 2. if it shall be proved to the satisfaction of the court, that any such debtor has money or goods which he has wilfully and fraudulently concealed: in that case the court shall have power to enlarge the aforesaid times of imprisonment for debts under twenty shillings, to any time not exceeding thirty days, and for debts under forty shillings, to any time not exceeding sixty days; which said ground of farther detention shall be specified in the said commitment. And that (by sect. 3.) at the expiration of the said respective times of imprisonment, every such person shall immediately be discharged, without paying any sum of money,

Request.
Blackst.
Comment.

Requiem
||
Reseda.

Resem-
blance.

money, or other reward or gratuity whatsoever, to the gaoler of such gaol on any pretence whatsoever; and every gaoler demanding or receiving any fee for the discharge of any such person, or keeping any such person prisoner after the said respective times limited by the said act, shall forfeit five pounds, to be recovered in a summary way before two justices of the peace, one moiety thereof to be paid to the overseers of the poor of the parish where the offence shall be committed, and the other to the informer.

REQUIEM, in the Romish history, a mass sung for the rest of the soul of a person deceased.

RESCISSION, in the civil law, an action intended for the annulling or setting aside any contract, deed, &c.

RESCRIPT, an answer delivered by an emperor, or a pope, when consulted by particular persons on some difficult question or point of law, to serve as a decision thereof.

RESEDA, **DYER'S-WEED**, *Yellow-weed*, *Weld*, or *Wild-woad*: A genus of the order of trigynia, belonging to the dodecandria class of plants; and in the natural method ranking under the 54th order, *Miscellanea*. The calyx is monophyllous and partite; the petals lanceolate; the capsule unilocular, and opening at the mouth. There are 11 species; of which the most remarkable is the luteola or common dyer's weed, growing naturally in waste places in many parts of Britain. The young leaves are often undulated; the stalk is a yard high, or more, terminated with a long naked spike of yellowish-green flowers: the plant is cultivated and much used for dying silk and wool of a yellow colour. The great recommendation of the plant is, that it will grow with very little trouble, without dung, and on the very worst soils. For this reason it is commonly sown with, or immediately after, barley or oats, without any additional care, except drawing a bush over it to harrow it in. The reaping of the corn does it little or no hurt, as it grows but little the first year; and the next summer it is pulled and dried like flax. Much care and nicety, however, is requisite, so as not to injure either the seed or stalk; or, which sometimes happens, damaging both, by letting it stand too long, or pulling it too green. To avoid these inconveniences, a better method of culture has been devised. This new method is to plough and harrow the ground very fine, without dung, as equally as possible, and then sowing about a gallon of seed, which is very small, upon an acre, some time in the month of August. In about two months it will be high enough to hoe, which must be carefully done, and the plants left about six inches asunder. In March it is to be hoed again, and this labour is to be repeated a third time in May. About the close of June, when the flower is in full vigour, and the stalk is become of a greenish-yellow, it should be pulled; a sufficient quantity of stems being left growing for seed till September. By this means the flower and stalk, both of them being carefully dried, will sell at a good price to the dyers, who employ it constantly, and in large quantities; add to this, that the seed being ripe and in perfect order, will yield a very considerable profit. In a tolerable year, when the seasons have not been unfavourable, the advantages derived from this vegetable will answer very well; but if the summer should be remarkably fine, and proper care is taken in getting it in, there will be

a very large produce upon an acre. The crop being, as has been shown, so early removed, the ground may be conveniently prepared for growing wheat the next year. Upon the whole, weld is in its nature a very valuable commodity in many respects, as it serves equally for woollen, linen, or silk; dyeing not only a rich and lasting yellow, but also, properly managed, all the different shades of yellow with brightness and beauty; and if these be previously dipped blue, they are by the weld changed into a very pleasing green, which our artists can also diversify into a great variety of shades.

RESEMBLANCE, and **DISSIMILITUDE**, the relations of likeness and difference among objects. See **COMPARISON**.

The connection that man hath with the beings around him, requires some acquaintance with their nature, their powers, and their qualities, for regulating his conduct. For acquiring a branch of knowledge so essential to our well-being, motives alone of reason and interest are not sufficient: nature hath providentially superadded curiosity, a vigorous propensity, which never is at rest. This propensity alone attaches us to every new object; and incites us to compare objects, in order to discover their differences and resemblances. Elem. of Criticism.

Resemblance among objects of the same kind, and dissimilitude among objects of different kinds, are too obvious and familiar to gratify our curiosity in any degree: its gratification lies in discovering differences among things where resemblance prevails, and resemblances where difference prevails. Thus a difference in individuals of the same kind of plants or animals, is deemed a discovery, while the many particulars in which they agree are neglected; and in different kinds, any resemblance is greedily remarked, without attending to the many particulars in which they differ. See Novelty.

A comparison of the former neither tends to gratify our curiosity, nor to set the objects compared in a stronger light: two apartments in a palace, similar in shape, size, and furniture, make separately as good a figure as when compared; and the same observation is applicable to two similar compartments in a garden: on the other hand, oppose a regular building to a fall of water, or a good picture to a towering hill, or even a little dog to a large horse, and the contrast will produce no effect. But a resemblance between objects of different kinds, and a difference between objects of the same kind, have remarkably an enlivening effect. The poets, such of them as have a just taste, draw all their similes from things that in the main differ widely from the principal subject; and they never attempt a contrast, but where the things have a common genus, and a resemblance in the capital circumstances: place together a large and a small-sized animal of the same species, the one will appear greater, the other less, than when viewed separately: when we oppose beauty to deformity, each makes a greater figure by the comparison. We compare the dress of different nations with curiosity, but without surprise; because they have no such resemblance in the capital parts as to please us by contrasting the smaller parts. But a new cut of a sleeve, or of a pocket, enchants by its novelty; and, in opposition to the former fashion, raises some degree of surprise.

That resemblance and dissimilitude have an enlivening

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ing effect upon objects of sight, is made sufficiently evident; and that they have the same effect upon objects of the other senses, is also certain. Nor is that law confined to the external senses; for characters contrasted make a greater figure by the opposition: Iago, in the tragedy of Othello, says,

He hath a daily beauty in his life
That makes me ugly.

The character of a fop, and of a rough warrior, are nowhere more successfully contrasted than in Shakespeare:

Hotspur. My liege, I did deny no prisoners:
But I remember, when the fight was done,
When I was dry with rage, and extreme toil,
Breathless and faint, leaning upon my sword,
Came there a certain lord, neat, trimly dress'd,
Fresh as a bridegroom; and his chin, new-reap'd,
Show'd like a stubble-land at harvest-home.
He was perfum'd like a milliner;
And 'twixt his finger and his thumb he held
A pouncet-box, which ever and anon
He gave his nose:—and still he smil'd and talk'd;
And as the soldiers bare dead bodies by,
He call'd them untaught knaves, unmannerly,
To bring a slovenly, unhandsome corse
Betwixt the wind and his nobility.
With many holiday and lady terms
He question'd me: among the rest, demanded
My pris'ners, in your majesty's behalf.
I then, all smarting with my wounds; being gall'd
To be so pester'd with a popinjay,
Out of my grief, and my impatience,
Answer'd, neglectingly, I know not what:
He should, or should not; for he made me mad,
To see him shine so brisk, and smell so sweet,
And talk so like a waiting gentlewoman,
Of guns, and drums, and wounds, (God save the mark!)
And telling me, the sovereign'st thing on earth
Was parmacity for an inward bruise;
And that it was great pity, so it was,
This villanous saltpetre should be digg'd
Out of the bowels of the harmless earth,
Which many a good, tall fellow had destroy'd
So cowardly: and but for these vile guns,
He would himself have been a soldier.—

First part, Henry IV. act 1. sc. 4

Passions and emotions are also enflamed by comparison. A man of high rank humbles the bystanders even to annihilate them in their own opinion: Cæsar, beholding the statue of Alexander, was greatly mortified, that now, at the age of 32, when Alexander died, he had not performed one memorable action.

Our opinions also are much influenced by comparison. A man whose opulence exceeds the ordinary standard is reputed richer than he is in reality; and wisdom or weakness, if at all remarkable in an individual, is generally carried beyond the truth.

The opinion a man forms of his present distress is heightened by contrasting it with his former happiness:

————— Could I forget
What I have been, I might the better bear
What I'm destin'd to. I'm not the first

That have been wretched: but to think how much
I have been happier.

Southern's Innocent Adultery, act 2.

Resem-
blance.

The distress of a long journey makes even an indifferent inn agreeable: and, in travelling, when the road is good, and the horseman well covered, a bad day may be agreeable, by making him sensible how snug he is.

The same effect is equally remarkable, when a man opposes his condition to that of others. A ship tossed about in a storm, makes the spectator reflect upon his own ease and security, and puts these in the strongest light.

A man in grief cannot bear mirth; it gives him a more lively notion of his unhappiness, and of course makes him more unhappy. Satan, contemplating the beauties of the terrestrial paradise, has the following exclamation:

With what delight could I have walk'd thee round,
If I could joy in ought, sweet interchange
Of hill and valley, rivers, woods, and plains,
Now land, now sea, and shores with forest crown'd,
Rocks, dens, and caves! but I in none of these
Find place or refuge; and the more I see
Pleasures about me, so much more I feel
Torment within me, as from the hateful siege
Of contraries: all good to me becomes
Bane, and in heav'n much worse would be my state.

Paradise Lost, book 9. l. 114.

The appearance of danger gives sometimes pleasure, sometimes pain. A timorous person upon the battlements of a high tower, is seized with fear, which even the consciousness of security cannot dissipate. But upon one of a firm head, this situation has a contrary effect: the appearance of danger heightens, by opposition, the consciousness of security, and consequently the satisfaction that arises from security: here the feeling resembles that above-mentioned, occasioned by a ship labouring in a storm.

The effect of magnifying or lessening objects by means of comparison is to be attributed to the influence of passion over our opinions. This will evidently appear by reflecting in what manner a spectator is affected, when a very large animal is for the first time placed beside a very small one of the same species. The first thing that strikes the mind is the difference between the two animals, which is so great as to occasion surprise; and this, like other emotions, magnifying its object, makes us conceive the difference to be the greatest that can be: we see, or seem to see, the one animal extremely little, and the other extremely large. The emotion of surprise arising from any unusual resemblance, serves equally to explain, why at first view we are apt to think such resemblance more entire than it is in reality. And it must be observed, that the circumstances of more and less, which are the proper subjects of comparison, raise a perception so indistinct and vague as to facilitate the effect described; we have no mental standard of great and little, nor of the several degrees of any attribute; and the mind, thus unrestrained, is naturally disposed to indulge its surprise to the utmost extent.

In exploring the operations of the mind, some of which are extremely nice and slippery, it is necessary

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to proceed with the utmost circumspection: and after all, seldom it happens that speculations of that kind afford any satisfaction. Luckily, in the present case, our speculations are supported by facts and solid argument. First, a small object of one species opposed to a great object of another, produces not, in any degree, that deception which is so remarkable when both objects are of the same species. The greatest disparity between objects of different kinds, is so common as to be observed with perfect indifference; but such disparity between the objects of the same kind being uncommon, never fails to produce surprise: and may we not fairly conclude, that surprise, in the latter case, is what occasions the deception, when we find no deception in the former? In the next place, if surprise be the sole cause of the deception, it follows necessarily that the deception will vanish as soon as the objects compared become familiar. This holds so unerringly, as to leave no reasonable doubt that surprise is the prime mover: our surprise is great, the first time a small lapdog is seen with a large mastiff; but when two such animals are constantly together, there is no surprise, and it makes no difference whether they be viewed separately or in company. We set no bounds to the riches of a man who has recently made his fortune; the surprising disproportion between his present and his past situation being carried to an extreme: but with regard to a family that for many generations hath enjoyed great wealth, the same false reckoning is not made. It is equally remarkable, that a trite simile has no effect: a lover compared to a moth scorching itself at the flame of a candle, originally a sprightly simile, has by frequent use lost all force; love cannot now be compared to fire, without some degree of disgust. It has been justly observed against Homer, that the lion is too often introduced into his similes; all the variety he is able to throw into them not being sufficient to keep alive the reader's surprise.

To explain the influence of comparison upon the mind, we have chosen the simplest case, viz. the first sight of two animals of the same kind, differing in size only; but to complete the theory, other circumstances must be taken in. And the next supposition we make, is where both animals, separately familiar to the spectator, are brought together for the first time. In that case, the effect of magnifying and diminishing is found remarkably greater than in that first mentioned; and the reason will appear upon analysing the operation: the first feeling we have is of surprise at the uncommon difference of two creatures of the same species; we are next sensible, that the one appears less, the other larger, than they did formerly; and that new circumstance increasing our surprise, makes us imagine a still greater opposition between the animals, than if we had formed no notion of them beforehand.

Let us make one other supposition, that the spectator was acquainted beforehand with one of the animals only; the lapdog, for example. This new circumstance will vary the effect; for, instead of widening the natural difference, by enlarging in appearance the one animal, and diminishing the other in proportion, the whole apparent alteration will rest upon the lapdog: the surprise to find it less than it appeared formerly, directs to it our whole attention, and makes us conceive it to be a most diminutive creature: the mastiff

in the mean time is quite overlooked. To illustrate this effect by a familiar example. Take a piece of paper or of linen tolerably white, and compare it with a pure white of the same kind: the judgment we formed of the first object is instantly varied; and the surprise occasioned by finding it less white than was thought, produceth a hasty conviction that it is much less white than it is in reality: withdrawing now the pure white, and putting in its place a deep black, the surprise occasioned by that new circumstance carries us to the other extreme, and makes us conceive the object first mentioned to be a pure white: and thus experience compels us to acknowledge, that our emotions have an influence even upon our eye-sight. This experiment leads to a general observation, that whatever is found more strange and beautiful than was expected, is judged to be more strange and beautiful than it is in reality. Hence a common artifice, to depreciate beforehand what we wish to make a figure in the opinion of others.

The comparisons employed by poets and orators are of the kind last mentioned; for it is always a known object that is to be magnified or lessened. The former is effected by likening it to some grand object, or by contrasting it with one of an opposite character. To effectuate the latter, the method must be reversed: the object must be contrasted with something superior to it, or likened to something inferior. The whole effect is produced upon the principal object; which by that means is elevated above its rank, or depressed below it.

In accounting for the effect that any unusual resemblance or dissimilitude hath upon the mind, no cause has been mentioned but surprise; and to prevent confusion, it was proper to discuss that cause first. But surprise is not the only cause of the effect described: another occurs, which operates perhaps not less powerfully, viz. a principle in human nature that lies still in obscurity, not having been unfolded by any writer, though its effects are extensive: and as it is not distinguished by a proper name, the reader must be satisfied with the following description. Every man who studies himself or others, must be sensible of a tendency or propensity in the mind to complete every work that is begun, and to carry things to their full perfection. There is little opportunity to display that propensity upon natural operations, which are seldom left imperfect; but in the operations of art it hath great scope: it impels us to persevere in our own work, and to wish for the completion of what another is doing: we feel a sensible pleasure when the work is brought to perfection; and our pain is not less sensible when we are disappointed. Hence our uneasiness when an interesting story is broke off in the middle, when a piece of music ends without a close, or when a building or garden is left unfinished. The same propensity operates in making collections; such as the whole works, good and bad, of any author. A certain person attempted to collect prints of all the capital paintings, and succeeded except as to a few. La Bruyere remarks, that an anxious search was made for these; not for their value, but to complete the set.

The final cause of the propensity is an additional proof of its existence. Human works are of no significance till they be completed; and reason is not always a sufficient counterbalance to indolence: some prin-

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ciple over and above is necessary to excite our industry, and to prevent our stopping short in the middle of the course.

We need not lose time to describe the co-operation of the foregoing propensity with surprise, in producing the effect that follows any unusual resemblance or dissimilitude. Surprise first operates, and carries our opinion of the resemblance or dissimilitude beyond truth. The propensity we have been describing carries us still farther; for it forces upon the mind a conviction, that the resemblance or dissimilitude is complete. We need no better illustration, than the resemblance that is fancied in some pebbles to a tree or an insect; which resemblance, however faint in reality, is conceived to be wonderfully perfect. The tendency to complete a resemblance acting jointly with surprise, carries the mind sometimes so far, as even to presume upon future events. In the Greek tragedy entitled *Phineides*, those unhappy women seeing the place where it was intended they should be slain, cried out with anguish, "They now saw their cruel destiny had condemned them to die in that place, being the same where they had been exposed in their infancy."

Arist. Poet.
cap. 17.

The propensity to advance every thing to its perfection, not only co-operates with surprise to deceive the mind, but of itself is able to produce that effect. Of this we see many instances where there is no place for surprise; and the first we shall give is of resemblance. *Unumquodque eodem modo dissolvitur quo colligatum est*, is a maxim in the Roman law that has no foundation in truth; for tying and loosing, building and demolishing, are acts opposite to each other, and are performed by opposite means: but when these acts are connected by their relation to the same subject, their connection leads us to imagine a sort of resemblance between them, which by the foregoing propensity is conceived to be as complete as possible. The next instance shall be of contrast. Addison observes, "That the palest features look the most agreeable in white; that a face which is overflushed appears to advantage in the deepest scarlet; and that a dark complexion is not a little alleviated by a black hood." The foregoing propensity serves to account for these appearances; to make this evident, one of the cases shall suffice. A complexion, however dark, never approaches to black: when these colours appear together, their opposition strikes us; and the propensity we have to complete the opposition, makes the darkness of complexion vanish out of sight.

Spectator,
n^o 265.

The operation of this propensity, even where there is no ground for surprise, is not confined to opinion or conviction: so powerful it is, as to make us sometimes proceed to action, in order to complete a resemblance or dissimilitude. If this appear obscure, it will be made clear by the following instance. Upon what principle is the *lex talionis* founded, other than to make the punishment resemble the mischief? Reason dictates, that there ought to be a conformity or resemblance between a crime and its punishment; and the foregoing propensity impels us to make the resemblance as complete as possible. Titus Livius, under the influence of that propensity, accounts for a certain punishment by a resemblance between it and the crime, too subtle for common apprehension. Speaking of

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Mettus Fuffetius, the Alban general, who, for treachery to the Romans his allies, was sentenced to be torn to pieces by horses, he puts the following speech in the mouth of Tullus Hostilius, who decreed the punishment. "*Mette Fuffeti, inquit, si ipse discere posses fidem ac fœdera servare, vivo tibi ea disciplina a me adhibita esset. Nunc, quoniam tuum insanabile ingenium est, at tu tuo supplicio doce humanum genus ea sancta credere, quæ a te violata sunt. Ut igitur paulo ante animum inter Fidenatem Romanamque rem ancipitem gessisti, ita jam corpus passim distrabendum dabis.*" By the same influence, the sentence is often executed upon the very spot where the crime was committed. In the *Electra* of Sophocles, Egistheus is dragged from the theatre into an inner room of the supposed palace, to suffer death where he murdered Agamemnon. Shakespeare, whose knowledge of nature is not less profound than extensive, has not overlooked this propensity:

"*Othello.* Get me some poison, Iago, this night. I'll not expostulate with her, lest her body and her beauty unprovide my mind again. This night, Iago."

"*Iago.* Do it not with poison; strangle her in her bed, even in the bed she hath contaminated."

"*Othello.* Good, good: the justice of it pleases: very good."

Othello, act 4. sc. 5.

Persons in their last moments are generally seized with an anxiety to be buried with their relations. In the *Amynta* of Tasso, the lover, hearing that his mistress was torn to pieces by a wolf, expresses a desire to die the same death.

Upon the subject in general we have two remarks to add. The first concerns resemblance, which, when too entire, hath no effect, however different in kind the things compared may be. The remark is applicable to works of art only; for natural objects of different kinds have scarce ever an entire resemblance. To give an example in a work of art: Marble is a sort of matter very different from what composes an animal; and marble cut into a human figure, produces great pleasure by the resemblance: but if a marble statue be coloured like a picture, the resemblance is so entire as at a distance to make the statue appear a real person: we discover the mistake when we approach; and no other emotion is raised, but surprise occasioned by the deception: the figure still appears a real person, rather than an imitation; and we must use reflection to correct the mistake. This cannot happen in a picture; for the resemblance can never be so entire as to disguise the imitation.

The other remark belongs to contrast. Emotions make the greatest figure when contrasted in succession; but then the succession ought neither to be rapid, nor immoderately slow: if too slow, the effect of contrast becomes faint by the distance of the emotions; and if rapid, no single emotion has room to expand itself to its full size, but is stifled, as it were, in the birth by a succeeding emotion. The funeral oration of the bishop of Meux upon the duchess of Orleans, is a perfect hodge-podge of cheerful and melancholy representations, following each other in the quickest succession: opposite emotions are best felt in succession; but each emotion separately should be raised to its due pitch, before another be introduced.

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What is above laid down, will enable us to determine a very important question concerning emotions raised by the fine arts, viz. Whether ought similar emotions to succeed each other, or dissimilar? The emotions raised by the fine arts are for the most part too nearly related to make a figure by resemblance; and for that reason their succession ought to be regulated as much as possible by contrast. This holds confessedly in epic and dramatic compositions; and the best writers, led perhaps by taste more than by reasoning, have generally aimed at that beauty. It holds equally in music: in the same cantata all the variety of emotions that are within the power of music, may not only be indulged, but, to make the greatest figure, ought to be contrasted. In gardening, there is an additional reason for the rule: the emotions raised by that art, are at best so faint, that every artifice should be employed to give them their utmost vigour: a field may be laid out in grand, sweet, gay, neat, wild, melancholy scenes; and when these are viewed in succession, grandeur ought to be contrasted with neatness, regularity with wildness, and gaiety with melancholy, so as that each emotion may succeed its opposite: nay, it is an improvement to intermix in the succession rude uncultivated spots as well as unbounded views, which in themselves are disagreeable, but in succession heighten the feeling of the agreeable object; and we have nature for our guide, which in her most beautiful landscapes often intermixes rugged rocks, dirty marshes, and barren stony heaths. The greatest masters of music have the same view in their compositions: the second part of an Italian song seldom conveys any sentiment: and, by its harshness, seems purposely contrived to give a greater relish for the interesting parts of the composition.

A small garden, comprehended under a single view, affords little opportunity for that embellishment. Dissimilar emotions require different tones of mind; and therefore in conjunction can never be pleasant: gaiety and sweetness may be combined, or wildness and gloominess; but a composition of gaiety and gloominess is distasteful. The rude uncultivated compartment of furze and broom in Richmond garden, hath a good effect in the succession of objects; but a spot of that nature would be insufferable in the midst of a polished parterre or flower-plot. A garden, therefore, if not of great extent, admits not dissimilar emotions; and in ornamenting a small garden, the safest course is to confine it to a single expression. For the same reason, a landscape ought also to be confined to a single expression; and accordingly it is a rule in painting, that if the subject be gay, every figure ought to contribute to that emotion.

It follows from the foregoing train of reasoning, that a garden near a great city ought to have an air of solitude. The solitariness, again, of a waste country ought to be contrasted in forming a garden; no temples, no obscure walks; but *jets d'eau*, cascades, objects active, gay, and splendid. Nay, such a garden should in some measure avoid imitating nature, by taking on an extraordinary appearance of regularity and art, to show the busy hand of man, which in a waste country has a fine effect by contrast.

Wit and ridicule make not an agreeable mixture

with grandeur. Dissimilar emotions have a fine effect in a slow succession; but in a rapid succession, which approaches to co-existence, they will not be relished. In the midst of a laboured and elevated description of battle, Virgil introduces a ludicrous image, which is certainly out of its place:

Obvius ambustum torrem Chorinæus ab ara
Corripit, et venienti Ebufo plagamque ferenti
Occupat os flammis: illi ingens barba reluxit,
Nidoremque ambusta dedit. *Æn.* xii. 298.

E, qual tauro ferito, il suo dolore
Verbo mugghiando e sospirando fuore.

Gierusal. cant. 4. st. 1.

It would however be too austere to banish altogether ludicrous images from an epic poem. This poem doth not always soar above the clouds: it admits great variety; and upon occasion can descend even to the ground without sinking. In its more familiar tones, a ludicrous scene may be introduced without impropriety. This is done by Virgil* in a foot-race: the circumstances of which, not excepting the ludicrous part, are copied from Homer†. After a fit of merriment, we are, it is true, the less disposed to the serious and sublime: but then, a ludicrous scene, by unbending the mind from severe application to more interesting subjects, may prevent fatigue, and preserve our relish entire.

RESEN, (Moses); a town on the Tigris, built by Nimrod; thought to be the *Larissa* of Xenophon; which see. But as *Larissa* is a name in imitation of a Greek city; and as there were no Greek cities, consequently no *Larissa* in Assyria, before Alexander the Great; it is probable that the Greeks asking of what city those were the ruins they saw, the Assyrians might answer, *Laresen*, "Of *Resen*;" which word Xenophon expressed by *Larissa*, a more familiar sound to a Greek ear, (Wells).

RESENTMENT, means a strong perception of good or ill, generally a deep sense of injury, and may be distinguished into *anger* and *revenge*. "By anger (says Archdeacon Paley), I mean the pain we suffer upon the receipt of an injury or affront, with the usual effects of that pain upon ourselves. By revenge, the inflicting of pain upon the person who has injured or offended us, farther than the just ends of punishment or reparation require. Anger prompts to revenge; but it is possible to suspend the effect when we cannot altogether quell the principle. We are bound also to endeavour to qualify and correct the principle itself. So that our duty requires two different applications of the mind: and for that reason anger and revenge should be considered separately." See REVENGE.

RESERVATION, in law, an action or clause whereby something is reserved, or secured to one's self.

Mental RESERVATION, a proposition which, strictly taken, and according to the natural import of the terms, is false; but, if qualified by something concealed in the mind, becomes true.

Mental reservations are the great refuge of religious hypocrites, who use them to accommodate their consciences with their interests: the Jesuits are zealous advocates for mental reservations; yet are they real lies, as including an intention to deceive.

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RESERVE, in law, the same with reservation. See RESERVATION.

Body of RESERVE, or Corps de RESERVE, in military affairs, the third or last line of an army, drawn up for battle; so called because they are reserved to sustain the rest as occasion requires, and not to engage but in case of necessity.

RESERVOIR, a place where water is collected and reserved, in order to be conveyed to distant places through pipes, or supply a fountain or jet d'eau.

RESET, in law, the receiving or harbouring an outlawed person. See OUTLAWRY.

RESET of Theft, in Scots law. See LAW, n° clxxxvi. 29.

RESIDENCE, in the canon and common law, the abode of a person or incumbent upon his benefice; and his assiduity in attending on the same.

RESIDENT, a public minister, who manages the affairs of a kingdom or state, at a foreign court.

They are a class of public ministers inferior to ambassadors or envoys; but, like them, are under the protection of the law of nations.

RESIDUE, the remainder or balance of an account, debt, or obligation.

RESIGNATION, in general, signifies the implicit submission of ourselves, or of something we possess, to the will of another. In a religious sense it signifies a perfect submission, without discontent, to the will of God. See MORAL PHILOSOPHY, n° 119.

RESIN, in natural history, a viscid juice oozing either spontaneously, or by incision, from several trees, as the pine, fir, &c.—A premium for several years has been offered by the London Society for Encouraging Arts, &c. for discovering a mode of reducing the inflammable quality of resin, so as to adapt it to the purposes of making candles; but no such discovery has yet been made.

Elastic RESIN. See CAOUTCHOUC.

Gum RESIN, a mixture of gum and resin. See PHARMACY, n° 38.

Red Gum RESIN, is procured from the red gum tree, or eucalyptus resinifera; a tree so large and lofty as to exceed in size the English oak. The wood of the tree is brittle, and of little use but for firewood, from the large quantity of resinous gum it contains. The tree is distinguished by having pedunculated flowers, and an acute or pointed conical calyptra. To obtain the juice from this tree incisions are made in the trunk of it, and sometimes upwards of 60 gallons of red resinous juice have been obtained from one of them. "When this juice is dried, it becomes a very powerful astringent gum-resin, of a red colour, much resembling that known in the shops by the name of *kino*, and, for all medical purposes, fully as efficacious. Mr White administered it to a great number of patients in the dyfentery, which prevailed much soon after the landing of the convicts, and in no one instance found it to fail. This gum-resin dissolves almost entirely in spirit of wine, to which it gives a blood-red tincture. Water dissolves about one sixth part only, and the watery solution is of a bright red. Both these solutions are powerfully astringent."

Yellow Gum RESIN, is procured from the yellow resin tree, which is as large as the English walnut tree. The properties of this resin are equal to those of the

most fragrant balsams. It exudes from the bark spontaneously, but more readily if incisions are made. The colour of it is yellow, and at first it is fluid; but after being inspissated in the sun, it becomes solid. When burnt on hot coals, it smells like a mixture of balsam of Tolu and benzoin, approaching somewhat to storax. "It is perfectly soluble in spirit of wine, but not in water, nor even in essential oil of turpentine, unless it be digested in a strong heat. The varnish which it makes with either is very weak, and of little use. With respect to its medicinal qualities, Mr White has found it, in many cases, a good pectoral medicine, and very balsamic. It is not obtainable in so great abundance as the red gum produced by the eucalyptus resinifera. The plant which produces the yellow gum seems to be perfectly unknown to botanists, but Mr White has communicated no specimens by which its genus or even class could be determined."

RESINOUS ELECTRICITY, is that kind of electricity which is produced by exciting bodies of the resinous kind, and which is generally negative. See ELECTRICITY *passim*.

RESISTANCE, or *RESISTING Force*, in philosophy, denotes, in general, any power which acts in an opposite direction to another, so as to destroy or diminish its effect. See MECHANICS, HYDROSTATICS, and PNEUMATICS.

Of all the resistances of bodies to each, there is undoubtedly none of greater importance than the resistance or reaction of fluids. It is here that we must look for a theory of naval architecture, for the impulse of the air is our moving power, and this must be modified so as to produce every motion we want by the form and disposition of our sails; and it is the resistance of the water which must be overcome, that the ship may proceed in her course; and this must also be modified to our purpose, that the ship may not drive like a log to leeward, but on the contrary may ply to windward, that she may answer her helm briskly, and that she may be easy in all her motions on the surface of the troubled ocean. The impulse of wind and water makes them ready and indefatigable servants in a thousand shapes for driving our machines; and we should lose much of their service did we remain ignorant of the laws of their action: they would sometimes become terrible masters, if we did not fall upon methods of eluding or softening their attacks.

We cannot refuse the ancients a considerable knowledge of this subject. It was equally interesting to them as to us; and we cannot read the accounts of the naval exertions of Phœnicia, Carthage, and of Rome, exertions which have not been surpassed by any thing of modern date, without believing that they possessed much practical and experimental knowledge of this subject. It was not, perhaps, possessed by them in a strict and systematic form, as it is now taught by our mathematicians; but the master-builders, in their dockyards, did undoubtedly exercise their genius in comparing the forms of their finest ships, and in marking those circumstances of form and dimension which were in fact accompanied with the desirable properties of a ship, and thus framing to themselves maxims of naval architecture in the same manner as we do now. For we believe

White's
Voyage,
Appendix.

Resinous,
Resistance.

Importance
of the sub-
ject.

The an-
cients were
tolerably
well ac-
quainted
with it.

Resistance. believe that our naval architects are not disposed to grant that they have profited much by all the labours of the mathematicians. But the ancients had not made any great progress in the physicomathematical sciences, which consist chiefly in the application of calculus to the phenomena of nature. In this branch they could make none, because they had not the means of investigation. A knowledge of the motions and actions of fluids is accessible only to those who are familiarly acquainted with the fluxionary mathematics; and without this key there is no admittance. Even when possessed of this guide, our progress has been very slow, hesitating, and devious; and we have not yet been able to establish any set of doctrines which are susceptible of an easy and confident application to the arts of life. If we have advanced farther than the ancients, it is because we have come after them, and have profited by their labours, and even by their mistakes.

3
But even now it is not perfectly understood.

4
Sir I. Newton first applied mathematics to it.

5
Difficulties hemet with in it.

6
He proposed a theory,

7
Which does not, however, agree with experiment.

Sir Isaac Newton was the first (as far as we can recollect) who attempted to make the motions and actions of fluids the subject of mathematical discussion. He had invented the method of fluxions long before he engaged in his physical researches; and he proceeded in these *sua mathefi facem praeferente*. Yet even with this guide he was often obliged to grope his way, and to try various bye-paths, in the hopes of obtaining a legitimate theory. Having exerted all his powers in establishing a theory of the lunar motions, he was obliged to rest contented with an approximation instead of a perfect solution of the problem which ascertains the motions of three bodies mutually acting on each other. This convinced him that it was in vain to expect an accurate investigation of the motions and actions of fluids, where millions of unseen particles combine their influence. He therefore cast about to find some particular case of the problem which would admit of an accurate determination, and at the same time furnish circumstances of analogy or resemblance sufficiently numerous for giving limiting cases, which should include between them those other cases that did not admit of this accurate investigation. And thus, by knowing the limit to which the case proposed did approximate, and the circumstance which regulated the approximation, many useful propositions might be deduced for directing us in the application of these doctrines to the arts of life.

He therefore figured to himself a hypothetical collection of matter which possessed the characteristic property of fluidity, viz. the *quæquaversum* propagation of pressure, and the most perfect intermobility (pardon the uncouth term) of parts, and which formed a physical whole or aggregate, whose parts were connected by mechanical forces, determined both in degree and in direction, and such as rendered the determination of certain important circumstances of their motion susceptible of precise investigation. And he concluded, that the laws which he should discover in these motions must have a great analogy with the laws of the motions of real fluids: And from this hypothesis he deduced a series of propositions, which form the basis of almost all the theories of the impulse and resistance of fluids which have been offered to the public since his time.

It must be acknowledged, that the results of this theory agree but ill with experiment, and that, in the way in which it has been zealously prosecuted by subsequent

mathematicians, it proceeds on principles or assumptions which are not only gratuitous, but even false. But it affords such a beautiful application of geometry and calculus, that mathematicians have been as it were fascinated by it, and have published systems so elegant and so extensively applicable, that one cannot help lamenting that the foundation is so flimsy. John Bernoulli's theory, in his dissertation on the communication of motion, and Bouguer's in his *Traité du Navire*, and in his *Theorie du Manœuvre et de la Mâture des Vaisseaux*, must ever be considered as among the finest specimens of physicomathematical science which the world has seen. And, with all its imperfections, this theory still furnishes (as was expected by its illustrious author) many propositions of immense practical use, they being the limits to which the real phenomena of the impulse and resistance of fluids really approximate. So that when the law by which the phenomena deviate from the theory is once determined by a well chosen series of experiments, this hypothetical theory becomes almost as valuable as a true one. And we may add, that although Mr d'Alembert, by treading warily in the steps of Sir Isaac Newton in another route, has discovered a genuine and unexceptionable theory, the process of investigation is so intricate, requiring every finess of the most abstruse analysis, and the final equations are so complicated, that even their most expert author has not been able to deduce more than one simple proposition (which too was discovered by Daniel Bernoulli by a more simple process) which can be applied to any use. The hypothetical theory of Newton, therefore, continues to be the groundwork of all our practical knowledge of the subject.

Resistance.

8
But its utility is still very considerable.

We shall therefore lay before our readers a very short view of the theory, and the manner of applying it. We shall then show its defects (all of which were pointed out by its great author), and give an historical account of the many attempts which have been made to amend it or to substitute another: in all which we think it our duty to show, that Sir Isaac Newton took the lead, and pointed out every path which others have taken, if we except Daniel Bernoulli and d'Alembert; and we shall give an account of the chief sets of experiments which have been made on this important subject, in the hopes of establishing an empirical theory, which may be employed with confidence in the arts of life.

We know by experience that force must be applied to a body in order that it may move through a fluid, such as air or water; and that a body projected with any velocity is gradually retarded in its motion, and generally brought to rest. The analogy of nature makes us imagine that there is a force acting in the opposite direction, or opposing the motion, and that this force resides in, or is exerted by, the fluid. And the phenomena resemble those which accompany the known resistance of active beings, such as animals. Therefore we give to this supposed force the metaphorical name of RESISTANCE. We also know that a fluid in motion will hurry a solid body along with the stream, and that it requires force to maintain it in its place. A similar analogy makes us suppose that the fluid exerts force, in the same manner as when an active being impels the body before him; therefore we call this the *IMPULSION of a Fluid*. And as our knowledge of nature informs us that the mutual actions of bodies are in every

9
The term resistance, as here applied, explained.

Resistance. every case equal and opposite, and that the observed change of motion is the only indication, characteristic, and measure, of the changing force, the forces are the same (whether we call them impulsions or resistances) when the relative motions are the same, and therefore depend entirely on these relative motions. The force, therefore, which is necessary for keeping a body immoveable in a stream of water, flowing with a certain velocity, is the same with what is required for moving this body with this velocity through stagnant water. To any one who admits the motion of the earth round the sun, it is evident that we can neither observe nor reason from a case of a body moving through still water, nor of a stream of water pressing upon or impelling a quiescent body.

A body in motion appears to be resisted by a stagnant fluid, because it is a law of mechanical nature that force must be employed in order to put any body in motion. Now the body cannot move forward without putting the contiguous fluid in motion, and force must be employed for producing this motion. In like manner, a quiescent body is impelled by a stream of fluid, because the motion of the contiguous fluid is diminished by this solid obstacle; the resistance, therefore, or impulse, no way differs from the ordinary communications of motion among solid bodies.

To Sir Isaac Newton supposes two systems similar in their parts, and each part having a constant ratio to each.

Sir Isaac Newton, therefore, begins his theory of the resistance and impulse of fluids, by selecting a case where, although he cannot pretend to ascertain the motions themselves which are produced in the particles of a contiguous fluid, he can tell precisely their mutual ratios.

He supposes two systems of bodies such, that each body of the first is similar to a corresponding body of the second, and that each is to each in a constant ratio. He also supposes them to be similarly situated, that is, at the angles of similar figures, and that the homologous lines of these figures are in the same ratio with the diameters of the bodies. He farther supposes, that they attract or repel each other in similar directions, and that the accelerating connecting forces are also proportional; that is, the forces in the one system are to the corresponding forces in the other system in a constant ratio, and that, in each system taken apart, the forces are as the squares of the velocities directly, and as the diameters of the corresponding bodies, or their distances, inversely.

Effect of the similar parts being put in motion.

This being the case, it legitimately follows, that if similar parts of the two systems are put into similar motions, in any given instant, they will *continue* to move similarly, each correspondent body describing similar curves, with proportional velocities: For the bodies being similarly situated, the forces which act on a body in one system, arising from the combination of any number of adjoining particles, will have the same direction with the force acting on the corresponding body in the other system, arising from the combined action of the similar and similarly directed forces of the adjoining correspondent bodies of the other system; and these compound forces will have the same ratio with the simple forces which constitute them, and will be as the squares of the velocities directly, and as the distances, or any homologous lines inversely; and therefore the chords of curvature, having the direction of the centripetal or centrifugal forces, and similarly inclined to the tangents

of the curves described by the corresponding bodies, will have the same ratio with the distances of the particles. The curves described by the corresponding bodies will therefore be similar, the velocities will be proportional, and the bodies will be similarly situated at the end of the first moment, and exposed to the action of similar and similarly situated centripetal or centrifugal forces; and this will again produce similar motions during the next moment, and so on for ever. All this is evident to any person acquainted with the elementary doctrines of curvilinear motions, as delivered in the theory of physical astronomy.

Consequence deduced from it.

From this fundamental proposition, it clearly follows, that if two similar bodies, having their homologous lines proportional to those of the two systems, be similarly projected among the bodies of those two systems with any velocities, they will produce similar motions in the two systems, and will themselves continue to move similarly; and therefore will, in every subsequent moment, suffer similar diminutions or retardations. If the initial velocities of projection be the same, but the densities of the two systems, that is, the quantities of matter contained in an equal bulk or extent, be different, it is evident that the quantities of motion produced in the two systems in the same time will be proportional to the densities; and if the densities are the same, and uniform in each system, the quantities of motion produced will be as the squares of the velocities, because the motion communicated to each corresponding body will be proportional to the velocity communicated, that is, to the velocity of the impelling body; and the number of similarly situated particles which will be agitated will also be proportional to this velocity. Therefore, the whole quantities of motion produced in the same moment of time will be proportional to the squares of the velocities. And lastly, if the densities of the two systems are uniform, or the same through the whole extent of the systems, the number of particles impelled by similar bodies will be as the surfaces of these bodies.

Now the diminutions of the motions of the projected bodies are (by Newton's third law of motion) equal to the motions produced in the systems; and these diminutions are the measures of what are called the resistances opposed to the motions of the projected bodies. Therefore, combining all these circumstances, the resistances are proportional to the similar surfaces of the moving bodies, to the densities of the systems through which the motions are performed, and to the squares of the velocities, jointly.

13

We cannot form to ourselves any distinct notion of a fluid, otherwise than as a system of small bodies, or a collection of particles, similarly or symmetrically arranged, the centres of each being situated in the angles of regular solids. We must form this notion of it, whether we suppose, with the vulgar, that the particles are little globules in mutual contact, or, with the partisans of corpuscular attractions and repulsions, we suppose the particles kept at a distance from each other by means of these attractions and repulsions mutually balancing each other. In this last case, no other arrangement is consistent with a quiescent equilibrium: and in this case, it is evident, from the theory of curvilinear motions, that the agitations of the particles will always be such, that the connecting forces, in actual exertion, will

Resistance. will be proportional to the squares of the velocities directly, and to the chords of curvature having the direction of the forces inversely.

From these premises, therefore, we deduce, in the strictest manner, the demonstration of the leading theorem of the resistance and impulse of fluids; namely,

¹⁴
First law of the resistance, &c. of fluids. PROP. I. The resistances, and (by the third law of motion), the impulsions of fluids on similar bodies, are proportional to the surfaces of the solid bodies, to the densities of the fluids, and to the squares of the velocities, jointly.

We must now observe, that when we suppose the particles of the fluid to be in mutual contact, we may either suppose them elastic or unelastic. The motion communicated to the collection of elastic particles must be double of what the same body, moving in the same manner, would communicate to the particles of an unelastic fluid. The impulse and resistance of elastic fluids must therefore be double of those of unelastic fluids.—

¹⁵
Elasticity of water. But we must caution our readers not to judge of the elasticity of fluids by their sensible compressibility. A diamond is incomparably more elastic than the finest football, though not compressible in any sensible degree.— It remains to be decided, by well chosen experiments, whether water be not as elastic as air. If we suppose, with Boscovich, the particles of perfect fluids to be at a distance from each other, we shall find it difficult to conceive a fluid void of elasticity. We hope that the theory of their impulse and resistance will suggest experiments which will decide this question, by pointing out what ought to be the absolute impulse or resistance in either case. And thus the fundamental proposition of the impulse and resistance of fluids, taken in its proper meaning, is susceptible of a rigid demonstration, relative to the only distinct notion that we can form of the internal constitution of a fluid. We say, *taken in its proper meaning*; namely, that the impulse or resistance of fluids is a pressure, opposed and measured by another pressure, such as a pound weight, the force of a spring, the pressure of the atmosphere, and the like. And we apprehend that it would be very difficult to find any legitimate demonstration of this leading proposition different from this, which we have now borrowed from Sir Isaac Newton, Prop. 23. B. II. *Princip.* We acknowledge that it is prolix and even circuitous: but in all the attempts made by his commentators and their copyists to simplify it, we see great defects of logical argument, or assumption of principles, which are not only gratuitous, but inadmissible. We shall have occasion, as we proceed, to point out some of these defects; and doubt not but the illustrious author of this demonstration had exercised his uncommon patience and sagacity in similar attempts, and was dissatisfied with them all.

Before we proceed further, it will be proper to make a general remark, which will save a great deal of discussion. Since it is a matter of universal experience, that every action of a body on others is accompanied by an equal and contrary re-action; and since all that we can demonstrate concerning the resistance of bodies during their motions through fluids proceeds on this supposition, (the resistance of the body being assumed as equal and opposite to the sum of motions communicated to the particles of the fluid, estimated in the direction of the bodies motion), we are intitled to proceed in the

contrary order, and to consider the impulsions which each of the particles of fluid exerts on the body at rest, as equal and opposite to the motion which the body would communicate to that particle if the fluid were at rest, and the body were moving equally swift in the opposite direction. And therefore the whole impulsion of the fluid must be conceived as the measure of the whole motion which the body would thus communicate to the fluid. It must therefore be also considered as the measure of the resistance which the body, moving with the same velocity, would sustain from the fluid. When, therefore, we shall demonstrate any thing concerning the impulsion of a fluid, estimated in the direction of its motion, we must consider it as demonstrated concerning the resistance of a quiescent fluid to the motion of that body, having the same velocity in the opposite direction. The determination of these impulsions being much easier than the determination of the motions communicated by the body to the particles of the fluid, this method will be followed in most of the subsequent discussions.

The general proposition already delivered is by no means sufficient for explaining the various important phenomena observed in the mutual actions of solids and fluids. In particular, it gives us no assistance in ascertaining the modifications of this resistance or impulse, which depend on the shape of the body and the inclination of its impelled or resisted surface to the direction of the motion. Sir Isaac Newton found another hypothesis necessary; namely, that the fluid should be so extremely rare that the distance of the particles may be incomparably greater than their diameters. This additional condition is necessary for considering their actions as so many separate collisions or impulsions on the solid body. Each particle must be supposed to have abundant room to rebound, or otherwise escape, after having made its stroke, without sensibly affecting the situations and motions of the particles which have not yet made their stroke: and the motion must be so swift as not to give time for the sensible exertion of their mutual forces of attractions and repulsions.

Keeping these conditions in mind, we may proceed to determine the impulsions made by a fluid on surfaces of every kind: And the most convenient method to pursue in this determination, is to compare them all either with the impulse which the *same surface* would receive from the fluid impinging on it perpendicularly, or with the impulse which the *same stream of fluid* would make when coming perpendicularly on a surface of such extent as to occupy the whole stream.

It will greatly abbreviate language, if we make use of a few terms in an appropriated sense. ¹⁶
Terms explained.

By a *stream*, we shall mean a quantity of fluid moving in one direction, that is, each particle moving in parallel lines; and the *breadth* of the stream is a line perpendicular to all these parallels.

A *filament* means a portion of this stream of very small breadth, and it consists of an indefinite number of particles following one another in the same direction, and successively impinging on, or gliding along, the surface of the solid body.

The *base* of any surface exposed to a stream of fluid, is that portion of a plane perpendicular to the stream, which is covered or protected from the action of the stream by the surface exposed to its impulse. Thus the base of a sphere exposed to a stream of fluid is its great circle.

Resistance. circle, whose plane is perpendicular to the stream. If
 Plate BC (fig. 1.) be a plane surface exposed to the action
 of a stream of fluid, moving in the direction DC, then
 BR, or SE, perpendicular to DC, is its base.

Direct impulse shall express the energy or action of the particle or filament, or stream of fluid, when meeting the surface perpendicularly, or when the surface is perpendicular to the direction of the stream.

Absolute impulse means the actual pressure on the impelled surface, arising from the action of the fluid, whether striking the surface perpendicularly or obliquely; or it is the force impressed on the surface, or tendency to motion which it acquires, and which must be opposed by an equal force in the opposite direction, in order that the surface may be maintained in its place. It is of importance to keep in mind, that this pressure is always perpendicular to the surface. It is a proposition founded on universal and uncontradicted experience, that the mutual actions of bodies on each other are always exerted in a direction perpendicular to the touching surfaces. Thus, it is observed, that when a billiard ball A is struck by another B, moving in any direction whatever, the ball A always moves off in the direction perpendicular to the plane which touches the two balls in the point of mutual contact, or point of impulse. This inductive proposition is supported by every argument which can be drawn from what we know concerning the forces which connect the particles of matter together, and are the immediate causes of the communication of motion. It would employ much time and room to state them here; and we apprehend that it is unnecessary: for no reason can be assigned why the pressure should be in any particular oblique direction. If any one should say that the impulse will be in the direction of the stream, we have only to desire him to take notice of the effect of the rudder of a ship. This shows that the impulse is not in the direction of the stream, and is therefore in some direction transverse to the stream.—He will also find, that when a plane surface is impelled obliquely by a fluid, there is no direction in which it can be supported but the direction perpendicular to itself. It is quite safe, in the mean time, to take it as an experimental truth. We may, perhaps, in some other part of this work, give what will be received as a rigorous demonstration.

Relative or effective impulse means the pressure on the surface estimated in some particular direction. Thus BC (fig. 1.) may represent the sail of a ship, impelled by the wind blowing in the direction DC. GO may be the direction of the ship's keel, or the line of her course. The wind strikes the sail in the direction GH parallel to DC; the sail is urged or pressed in the direction GI, perpendicular to BC. But we are interested to know what tendency this will give the ship to move in the direction GO. This is the effective or relative impulse. Or BC may be the transverse section of the sail of a common wind-mill. This, by the construction of the machine, can move only in the direction GP, perpendicular to the direction of the wind; and it is only in this direction that the impulse produces the desired effect. Or BC may be half of the prow of a punt or lighter, riding at anchor by means of the cable DC, attached to the prow C. In this case, GQ, parallel to DC, is that part of the absolute impulse which is employed in straining the cable.

The *angle of incidence* is the angle FGC contained between the direction of the stream FG and the plane BC.

The *angle of obliquity* is the angle OGC contained between the plane and the direction GO, in which we wish to estimate the impulse.

PROP. II. The direct impulse of a fluid on a plane surface, is to its absolute oblique impulse on the same surface, as the square of the radius to the square of the sine of the angle of incidence. 17
Second law
of resist-
ance.

Let a stream of fluid, moving in the direction DC, (fig. 1.), act on the plane BC. With the radius CB describe the quadrant ABE; draw CA perpendicular to CE, and draw MNBS parallel to CE. Let the particle F, moving in the direction FG, meet the plane in G, and in FG produced take GH to represent the magnitude of the direct impulse, or the impulse which the particle would exert on the plane AC, by meeting it in V. Draw GI and HK perpendicular to BC, and HI perpendicular to GI. Also draw BR perpendicular to DC.

The force GH is equivalent to the two forces GI and GK; and GK being in the direction of the plane has no share in the impulse. The absolute impulse, therefore, is represented by GI; the angle GHI is equal to FGC, the angle of incidence; and therefore GH is to GI as radius to the sine of the angle of incidence: Therefore the direct impulse of each particle or filament is to its absolute oblique impulse as radius to the sine of the angle of incidence. But further, the number of particles or filaments which strike the surface AC, is to the number of those which strike the surface BC as AC to NC: for all the filaments between LA and MB go past the oblique surface BC without striking it. But BC:NC=rad.:sin. NBC, = rad.:sin. FGC, = rad.:sin. incidence. Now the whole impulse is as the impulse of each filament, and as the number of filaments exerting equal impulses jointly; therefore the whole direct impulse on AC is to the whole absolute impulse on BC, as the square of radius to the square of the sine of the angle of incidence.

Let S express the extent of the surface, i the angle of incidence, o the angle of obliquity, v the velocity of the fluid, and d its density. Let F represent the direct impulse, f the absolute oblique impulse, and p the relative or effective impulse: And let the tabular sines and cosines be considered as decimal fractions of the radius unity.

This proposition gives us $F:f=R^2:\text{Sin.}^2 i, = 1:\text{Sin.}^2 i$, and therefore $f=F \times \text{Sin.}^2 i$. Also, because impulses are in the proportion of the extent of surface similarly impelled, we have, in general, $f=FS \times \text{Sin.}^2 i$.

The first who published this theorem was Pardies, in his *Oeuvres de Mathématique*, in 1673. We know that Newton had investigated the chief propositions of the Principia before 1670.

PROP. III. The direct impulse on any surface is to the effective oblique impulse on the same surface, as the cube of radius to the solid, which has for its base the square of the sine of incidence, and the sine of obliquity for its height. 18
Third law.

Resistance. For, when GH represents the direct impulse of a particle, GI is the absolute oblique impulse, and GO is the effective impulse in the direction GO: Now GI is to GO as radius to the sine of GIO, and GIO is the complement of IGO, and is therefore equal to CGO, the angle of obliquity.

Therefore $f : \phi = R : \sin. O.$

But $F : f = R^2 : \sin.^2 i$

Therefore $F : \phi = R^3 : \sin.^3 i \times \sin. O.$ and

$\phi = F \times \sin.^3 i \times \sin. O.$

19 **Proportion** **Cor.**—The direct impulse on any surface is to the effective oblique impulse in the direction of the stream, as the cube of radius to the cube of the sine of incidence. For draw IQ and GP perpendicular to GH, and IP perpendicular to GP; then the absolute impulse GI is equivalent to the impulse GQ in the direction of the stream, and GP, which may be called the transverse impulse. The angle GIQ is evidently equal to the angle GHI, or FGC, the angle of incidence.

Therefore $f : \phi = GI : GQ = R : \sin. i.$

But $F : f = R^2 : \sin.^2 i.$

Therefore $F : \phi = R^3 : \sin.^3 i.$

And $\phi = F \times \sin.^3 i.$

20 **Impulse on** **a surface in** **motion.** Before we proceed further, we shall consider the impulse on a surface which is also in motion. This is evidently a frequent and an important case. It is perhaps the most frequent and important: It is the case of a ship under sail, and of a wind or water-mill at work.

Plate **CCCCXXVI.** Therefore, let a stream of fluid, moving with the direction and velocity DE, meet a plane BC, (fig. 1. n^o 2.), which is moving parallel to itself in the direction and with the velocity DF: It is required to determine the impulse?

Nothing is more easy: The mutual actions of bodies depend on their relative motions only. The motion DE of the fluid relative to BC, which is also in motion, is compounded of the real motion of the fluid and the opposite to the real motion of the body. Therefore produce FD till $Df = DF$, and complete the parallelogram $Df e E$, and draw the diagonal $D e$. The impulse on the plane is the same as if the plane were at rest, and every particle of the fluid impelled it in the direction and with the velocity $D e$; and may therefore be determined by the foregoing proposition. This proposition applies to every possible case; and we shall not bestow more time on it, but reserve the important modification of the general proposition for the cases which shall occur in the practical applications of the whole doctrine of the impulse and resistance of fluids.

21 **Proportion** **PROP. IV.** The direct impulse of a stream of fluid, whose breadth is given, is to its oblique effective impulse in the direction of the stream, as the square of radius to the square of the sine of the angle of incidence.

For the number of filaments which occupy the oblique plane BC, would occupy the portion NC of a perpendicular plane, and therefore we have only to compare the perpendicular impulse on any point V with the effective impulse made by the same filament FV on the oblique plane at G. Now GH represents the impulse which this filament would make at V; and GQ is the effective impulse of the same filament at G, estimated in the direction GH of the stream; and GH is to GQ as GH^2 to GI^2 , that is, as rad.^2 to $\sin.^2 i$.

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Cor. 1. The effective impulse in the direction of the stream on any plane surface BC, is to the direct impulse on its base BR or SE, as the square of the sine of the angle of incidence to the square of the radius.

2. If an isosceles wedge ACB (fig. 2.) be exposed to a stream of fluid moving in the direction of its height CD, the impulse on the sides is to the direct impulse on the base as the square of half the base AD to the square of the side AC, or as the square of the sine of half the angle of the wedge to the square of the radius. For it is evident, that in this case the two transverse impulses, such as GP in fig. 1, balance each other, and the only impulse which can be observed is the sum of the two impulses, such as GQ of fig. 1, which are to be compared with the impulses on the two halves AD, DB of the base. Now $AC : AB = \text{rad.} : \sin. ACD$, and ACD is equal to the angle of incidence.

Therefore, if the angle ACB is a right angle, and ACD is half a right angle, the square of AC is twice the square of AD, and the impulse on the sides of a rectangular wedge is half the impulse on its base.

Also, if a cube ACBE (fig. 3.) be exposed to a stream moving in a direction perpendicular to one of its sides, and then to a stream moving in a direction perpendicular to one of its diagonal planes, the impulse in the first case will be to the impulse in the second as $\sqrt{2}$ to 1. Call the perpendicular impulse on a side F, and the perpendicular impulse on its diagonal plane f , and the effective oblique impulse on its sides ϕ :—we have

$F : f = AC : AB = 1 : \sqrt{2}$, and

$f : \phi = AC^2 : AD^2 = 2 : 1$. Therefore

$F : \phi = 2 : \sqrt{2} = \sqrt{2} : 1$, or

very nearly as 10 to 7.

The same reasoning will apply to a pyramid whose base is a regular polygon, and whose axis is perpendicular to the base. If such a pyramid is exposed to a stream of fluid moving in the direction of the axis, the direct impulse on the base is to the effective impulse on the pyramid, as the square of the radius to the square of the sine of the angle which the axis makes with the sides of the pyramid.

And, in like manner, the direct impulsion on the base of a right cone is to the effective impulsion on the conical surface, as the square of the radius to the square of the sine of half the angle at the vertex of the cone. This is demonstrated, by supposing the cone to be a pyramid of an infinite number of sides.

We may in this manner compare the impulse on any polygonal surface with the impulse on its base, by comparing apart the impulses on each plane with those in their corresponding bases, and taking their sum.

And we may compare the impulse on a curved surface with that on its base, by resolving the curved surface into elementary planes, each of which is impelled by an elementary filament of the stream.

The following beautiful proposition, given by Le Seur and Jaquier, in their Commentary on the second Book of Newton's Principia, with a few examples of its application, will suffice for any further account of this theory.

PROP. V.—Let ADB (fig. 4.) be the section of a surface of simple curvature, such as is the surface of a cylinder. Let this be exposed to the action of a fluid moving in the direction AC. Let BC be the section base.

22 **The im-**
pulse on a
curved sur-
face com-
pared with
that on its
section base.

Resistance.

section of the plane (which we have called its base), perpendicular to the direction of the stream. In AC produced, take any length CG; and on CG describe the semicircle CHG, and complete the rectangle BCGO. Through any point D of the curve draw ED parallel to AC, and meeting BC and OG in Q and P. Let DF touch the curve in D, and draw the chord GH parallel to DF, and HKM perpendicular to CG, meeting ED in M. Suppose this to be done for every point of the curve ADB, and let LMN be the curve which passes through all the points of intersection of the parallels EDP and the corresponding perpendiculars HKM.

The effective impulse on the curve surface ADB in the direction of the stream, is to its direct impulse on the base BC as the area BCNL is to the rectangle BCGO.

Draw $edqmp$ parallel to EP and extremely near it. The arch Dd of the curve may be conceived as the section of an elementary plane, having the position of the tangent DF. The angle EDF is the angle of incidence of the filament ED de . This is equal to CGH, because ED, DF, are parallel to CG, GH; and (because CHG is a semicircle) CH is perpendicular to GH. Also $CG : CH = CH : CK$, and $CG : CK = CG^2 : CH^2 = \text{rad.}^2 : \sin.^2$, $CGH = \text{rad.}^2 : \sin.^2$ incid. Therefore if CG, or its equal DP, represent the direct impulse on the point Q of the base, CK, or its equal QM, will represent the effective impulse on the point D of the curve. And thus, $QqpP$ will represent the direct impulse of the filament on the element Qq of the base, and $QqmM$ will represent the effective impulse of the same filament on the element Dd of the curve. And, as this is true of the whole curve ADB, the effective impulse on the whole curve will be represented by the area BCNML; and the direct impulse on the base will be represented by the rectangle BCGO; and therefore the impulse on the curve-surface is to the impulse on the base as the area BLMNC is to the rectangle BOGC.

It is plain, from the construction, that if the tangent to the curve at A is perpendicular to AC, the point N will coincide with G. Also, if the tangent to the curve at B is parallel to AC, the point L will coincide with B.

Whenever, therefore, the curve ADB is such that an equation can be had to exhibit the general relation between the abscissa AR and the ordinate DR, we shall deduce an equation which exhibits the relation between the absciss CK and the ordinate KM of the curve LMN; and this will give us the ratio of BLNC to BOGC.

Thus, if the surface is that of a cylinder, so that the curve BDA b (fig. 5.), which receives the impulse of the fluid, is a semicircle, make CG equal to AC, and construct the figure as before. The curve BMG is a parabola, whose axis is CG, whose vertex is G, and whose parameter is equal to CG. For it is plain, that $CG = DC$, and $GH = CQ = MK$. And $CG \times GK = GH^2 = KM^2$. That is, the curve is such, that the square of the ordinate KM is equal to the rectangle of the abscissa GK and a constant line GC; and it is therefore a parabola whose vertex is G. Now, it is well

known, that the parabolic area BMGC is two thirds of the parallelogram BCGO. Therefore the impulse on the quadrant ADB is two thirds of the impulse on the base BC. The same may be said of the quadrant Adb and its base cb. Therefore, *The impulse on a cylinder or half cylinder is two thirds of the direct impulse on its transverse plane through the axis; or it is two thirds of the direct impulse on one side of a parallelopiped of the same breadth and height.*

PROP. VI.—If the body be a solid generated by the revolution of the figure BDAC (fig. 4.) round the axis AC; and if it be exposed to the action of a stream of fluid moving in the direction of the axis AC; then the effective impulse in the direction of the stream is to the direct impulse on its base, as the solid generated by the revolution of the figure BLMNC round the axis CN to the cylinder generated by the revolution of the rectangle BOGC.

This scarcely needs a demonstration. The figure ADBLMNA is a section of these solids by a plane passing through the axis; and what has been demonstrated of this section is true of every other, because they are all equal and similar. It is therefore true of the whole solids, and (their base) the circle generated by the revolution of BC round the axis AC.

Hence we easily deduce, that *The impulse on a sphere is one half of the direct impulse on its great circle, or on the base of a cylinder of equal diameter.*

For in this case the curve BMN (fig. 5.) which generates the solid expressing the impulse on the sphere is a parabola, and the solid is a parabolic conoid. Now this conoid is to the cylinder generated by the revolution of the rectangle BOGC round the axis CG, as the sum of all the circles generated by the revolution of ordinates to the parabola such as KM, to the sum of as many circles generated by the ordinates to the rectangle such as KT; or as the sum of all the squares described on the ordinates KM to the sum of as many squares described on the ordinates KT. Draw BG cutting MK in S. The square on MK is to the square on BC or TK as the abscissa GK to the abscissa GC (by the nature of the parabola), or as SK to BC; because SK and BC are respectively equal to GK and GC. Therefore the sum of all the squares on ordinates, such as MK, is to the sum of as many squares on ordinates, such as TK, as the sum of all the lines SK to the sum of as many lines TK; that is, as the triangle BGC to the rectangle BOGC; that is, as one to two: and therefore the impulse on the sphere is one half of the direct impulse on its great circle.

From the same construction we may very easily deduce a very curious and seemingly useful truth, that of all conical bodies having the circle whose diameter is AB (fig. 2.) for its base, and FD for its height, the one which sustains the smallest impulse or meets with the smallest resistance is the frustum AGHB of a cone ACB so constructed, that EF being taken equal to ED, EA is equal to EC. This frustum, though more capacious than the cone AFB of the same height, will be less resisted.

Also, if the solid generated by the revolution of BDAC (fig. 4.) have its anterior part covered with a frustum of a cone generated by the lines Da, aA, forming

Resistance. forming the angle at *a* of 135 degrees; this solid, though more capacious than the included solid, will be less resisted.

And, from the same principles, Sir Isaac Newton determined the form of the curve ADB which would generate the solid which, of all others of the same length and base, should have the least resistance.

These are curious and important deductions, but are not introduced here, for reasons which will soon appear.

The reader cannot fail to observe, that all that we have hitherto delivered on this subject, relates to the comparison of different impulses or resistances. We have always compared the oblique impulsions with the direct, and by their intervention we compare the oblique impulsions with each other. But it remains to give absolute measures of some individual impulsion; to which, as to an unit, we may refer every other. And as it is by their pressure that they become useful or hurtful, and they must be opposed by other pressures, it becomes extremely convenient to compare them all with that pressure with which we are most familiarly acquainted, the pressure of gravity.

²⁶ Different impulsions compared with the pressure of gravity. The manner in which the comparison is made, is this. When a body advances in a fluid with a known velocity, it puts a known quantity of the fluid into motion (as is supposed) with this velocity; and this is done in a known time. We have only to examine what weight will put this quantity of fluid into the same motion, by acting on it during the same time. This weight is conceived as equal to the resistance. Thus, let us suppose that a stream of water, moving at the rate of eight feet *per* second, is perpendicularly obstructed by a square foot of solid surface held fast in its place. Conceiving water to act in the manner of the hypothetical fluid now described, and to be without elasticity, the whole effect is the gradual annihilation of the motion of eight cubic feet of water moving eight feet in a second. And this is done in a second of time. It is equivalent to the gradually putting eight cubic feet of water into motion with this velocity; and doing this by acting uniformly during a second. What weight is able to produce this effect? The weight of eight feet of water, acting during a second on it, will, as is well known, give it the velocity of thirty-two feet *per* second; that is, four times greater. Therefore, the weight of the fourth part of eight cubic feet, that is, the weight of two cubic feet, acting during a second, will do the same thing, or the weight of a column of water whose base is a square foot, and whose height is two feet. This will not only produce this effect in the same time with the impulsion of the solid body, but it will also do it by the same degrees, as any one will clearly perceive, by attending to the gradual acceleration of the mass of water urged by $\frac{1}{4}$ of its weight, and comparing this with the gradual production or extinction of motion in the fluid by the progress of the resisted surface.

Now it is well known that 8 cubic feet of water, by falling one foot, which it will do in one-fourth of a second, will acquire the velocity of eight feet *per* second by its weight; therefore the force which produces the same effect in a whole second is one-fourth of this. This force is therefore equal to the weight of a column of

water, whose base is a square foot, and whose height is two feet; that is, twice the height necessary for acquiring the velocity of the motion by gravity. The conclusion is the same whatever be the surface that is resisted, whatever be the fluid that resists, and whatever be the velocity of the motion. In this inductive and familiar manner we learn, that *the direct impulse or resistance of an unelastic fluid on any plane surface, is equal to the weight of a column of the fluid having the surface for its base, and twice the fall necessary for acquiring the velocity of the motion for its height*: and if the fluid is considered as elastic, the impulse or resistance is twice as great. See Newt. *Princip.* B. II. prop. 35. and 38.

It now remains to compare this theory with experiment. Many have been made, both by Sir Isaac Newton and by subsequent writers. It is much to be lamented, that in a matter of such importance, both to the philosopher and to the artist, there is such a disagreement in the results with each other. We shall mention the experiments which seem to have been made with the greatest judgment and care. Those of Sir Isaac Newton were chiefly made by the oscillations of pendulums in water, and by the descent of balls both in water and in air. Many have been made by Mariotte (*Traité de Mouvement des Eaux*). Gravesande has published, in his *System of Natural Philosophy*, experiments made on the resistance or impulsions on solids in the midst of a pipe or canal. They are extremely well contrived, but are on so small a scale that they are of very little use. Daniel Bernoulli, and his pupil Professor Krafft, have published, in the *Comment. Acad. Petropol.* experiments on the impulse of a stream or vein of water from an orifice or tube: These are of great value. The Abbé Bossut has published others of the same kind in his *Hydrodynamique*. Mr Robins has published, in his *New Principles of Gunnery*, many valuable experiments on the impulse and resistance of air. The Chev. de Borda, in the *Mem. Acad. Paris*, 1763 and 1767, has given experiments on the resistance of air and also of water, which are very interesting. The most complete collection of experiments on the resistance of water are those made at the public expence by a committee of the academy of sciences, consisting of the marquis de Condorcet, Mr d'Alembert, Abbé Bossut, and others. The Chev. de Buat, in his *Hydraulique*, has published some most curious and valuable experiments, where many important circumstances are taken notice of, which had never been attended to before, and which give a view of the subject totally different from what is usually taken of it. Don George d'Ulloa, in his *Examine Maritime*, has also given some important experiments, similar to those adduced by Bougeur in his *Manœuvre des Vaisseaux*, but leading to very different conclusions. All these should be consulted by such as would acquire a practical knowledge of this subject. We must content ourselves with giving their most general and steady results. Such as,

1. It is very consonant to experiment that the resistances are proportional to the squares of the velocities. When the velocities of water do not exceed a few feet *per* second, no sensible deviation is observed. In very small velocities the resistances are sensibly greater than in this proportion, and this excess is plainly owing to the viscosity or imperfect fluidity of water. Sir Isaac

Resistance. Newton has shown that the resistance arising from this cause is constant, or the same in every velocity; and when he has taken off a certain part of the total resistance, he found the remainder was very exactly proportionable to the square of the velocity. His experiments to this purpose were made with balls a very little heavier than water, so as to descend very slowly; and they were made with his usual care and accuracy, and may be depended on.

²⁸
Causes of its disagreement with them. In the experiments made with bodies floating on the surface of water, there is an addition to the resistance arising from the inertia of the water. The water heaps up a little on the anterior surface of the floating body, and is depressed behind it. Hence arises a hydrostatical pressure, acting in concert with the true resistance. A similar thing is observed in the resistance of air, which is condensed before the body and rarefied behind it, and thus an additional resistance is produced by the unbalanced elasticity of the air; and also because the air, which is *actually* displaced, is denser than common air. These circumstances cause the resistances to increase faster than the squares of the velocities: but, even independent of this, there is an additional resistance arising from the tendency to rarefaction behind a very swift body; because the pressure of the surrounding fluid can only make the fluid fill the space left with a determined velocity.

We have had occasion to speak of this circumstance more particularly under GUNNERY and PNEUMATICS, when considering very rapid motions. Mr Robins had remarked that the velocity at which the observed resistance of the air began to increase so prodigiously, was that of about 1100 or 1200 feet per second, and that this was the velocity with which air would rush into a void. He concluded, that when the velocity was greater than this, the ball was exposed to the additional resistance arising from the unbalanced statical pressure of the air, and that this constant quantity behaved to be added to the resistance arising from the air's inertia in all greater velocities. This is very reasonable: But he imagined that in smaller velocities there was no such unbalanced pressure. But this cannot be the case: for although in smaller velocities the air will still fill up the space behind the body, it will not fill it up with air of the same density. This would be to suppose the motion of the air into the deserted place to be instantaneous. There must therefore be a rarefaction behind the body, and a pressure backward; arising from unbalanced elasticity, independent of the condensation on the anterior part. The condensation and rarefaction are caused by the same thing, *viz.* the limited elasticity of the air. Were this infinitely great, the smallest condensation before the body would be instantly diffused over the whole air, and so would the rarefaction, so that no pressure of unbalanced elasticity would be observed; but the elasticity is such as to propagate the condensation with the velocity of sound only, *i. e.* the velocity of 1142 feet per second. Therefore this additional resistance does not commence precisely at this velocity, but is sensible in all smaller velocities, as is very justly observed by Euler. But we are not yet able to ascertain the law of its increase, although it is a problem which seems susceptible of a tolerably accurate solution.

Precisely similar to this is the resistance to the motion of floating bodies, arising from the accumulation or gorging up of the water on their anterior surface, and its depression behind them. Were the gravity of the water infinite, while its inertia remains the same, the wave raised up at the prow of a ship would be instantly diffused over the whole ocean, and it would therefore be infinitely small, as also the depression behind the poop. But this wave requires time for its diffusion; and while it is not diffused, it acts by hydrostatical pressure. We are equally unable to ascertain the law of variation of this part of the resistance, the mechanism of waves being but very imperfectly understood. The height of the wave in the experiments of the French academy could not be measured with sufficient precision (being only observed *en passant*) for ascertaining its relation to the velocity. The Chev. Buat attempted it in his experiments, but without success. This must evidently make a part of the resistance in all velocities: and it still remains an undecided question, "What relation it bears to the velocities?" When the solid body is wholly buried in the fluid, this accumulation does not take place, or at least not in the same way: It may, however, be observed. Every person may recollect, that in a very swift running stream a large stone at the bottom will produce a small swell above it; unless it lies very deep, a nice eye may still observe it. The water, on arriving at the obstacle, glides past it in every direction, and is deflected on all hands; and therefore what passes over it is also deflected upwards, and causes the water over it to rise above its level. The nearer that the body is to the surface, the greater will be the perpendicular rise of the water, but it will be less diffused; and it is uncertain whether the *whole* elevation will be greater or less. By the whole elevation we mean the area of a perpendicular section of the elevation by a plane perpendicular to the direction of the stream. We are rather disposed to think that this area will be greatest when the body is near the surface. D'Ulloa has attempted to consider this subject scientifically; and is of a very different opinion, which he confirms by the single experiment to be mentioned by and by. Mean time, it is evident, that if the water which glides past the body cannot fall in behind it with sufficient velocity for filling up the space behind, there must be a void there; and thus a hydrostatical pressure must be superadded to the resistance arising from the inertia of the water. All must have observed, that if the end of a stick held in the hand be drawn slowly through the water, the water will fill the place left by the stick, and there will be no curled wave: but if the motion be very rapid, a hollow trough or gutter is left behind, and is not filled up till at some distance from the stick, and the wave which forms its sides is very much broken and curled. The writer of this article has often looked into the water from the poop of a second rate man of war when she was sailing 11 miles per hour, which is a velocity of 16 feet per second nearly; and he not only observed that the back of the rudder was naked for about two feet below the load water-line, but also that the trough or wake made by the ship was filled up with water which was broken and foaming to a considerable depth, and to a considerable distance from the vessel: There must therefore have been

Resistance. a void. He never saw the wake perfectly transparent (and therefore completely filled with water) when the velocity exceeded 9 or 10 feet per second. While this broken water is observed, there can be no doubt that there is a void and an additional resistance. But even when the space left by the body, or the space behind a still body exposed to a stream, is completely filled, it may not be filled sufficiently fast, and there may be (and certainly is, as we shall see afterwards) a quantity of water behind the body, which is moving more slowly away than the rest, and therefore hangs in some shape by the body, and is dragged by it, increasing the resistance. The quantity of this must depend partly on the velocity of the body or stream, and partly on the rapidity with which the surrounding water comes in behind. This last must depend on the pressure of the surrounding water. It would appear, that when this adjoining pressure is very great, as must happen when the depth is great, the augmentation of resistance now spoken of would be less. Accordingly this appears in Newton's experiments, where the balls were less retarded as they were deeper under water.

These experiments are so simple in their nature, and were made with such care, and by a person so able to detect and appreciate every circumstance, that they deserve great credit, and the conclusions *legitimately* drawn from them deserve to be considered as physical laws. We think that the present deduction is unexceptionable: for in the motion of balls, which hardly descended, their preponderancy being hardly sensible, the effect of depth must have borne a very great proportion to the whole resistance, and must have greatly influenced their motions; yet they were observed to fall as if the resistance had no way depended on the depth.

The same thing appears in Borda's experiments, where a sphere which was deeply immersed in the water was less resisted than one that moved with the same velocity near the surface; and this was very constant and regular in a course of experiments. D'Ulloa, however, affirms the contrary: He says that the resistance of a board, which was a foot broad, immersed one foot in a stream moving two feet per second, was $15\frac{1}{2}$ lbs. and the resistance to the same board, when immersed 2 feet in a stream moving $1\frac{1}{2}$ feet per second (in which case the surface was 2 feet), was $26\frac{1}{2}$ pounds (A).

We are very sorry that we cannot give a proper account of this theory of resistance by Don George Juan D'Ulloa, an author of great mathematical reputation, and the inspector of the marine academies in Spain. We have not been able to procure either the original or the French translation, and judge of it only by an extract by Mr Prony in his *Architecture Hydraulique*, § 868. &c. The theory is enveloped (according to Mr Prony's custom) in the most complicated expressions, so that the physical principles are kept almost out of sight. When accommodated to the simplest possible case, it is nearly as follows.

30. His theory of resistance. Let o be an elementary orifice or portion of the surface of the side of a vessel filled with a heavy fluid, and let h be its depth under the horizontal surface of the

fluid. Let δ be the density of the fluid, and ϕ the accelerative power of gravity, = 32 feet velocity acquired in a second.

It is known, says he, that the water would flow out at this hole with the velocity $u = \sqrt{2\phi h}$, and $u^2 = 2\phi h$ and $h = \frac{u^2}{2\phi}$. It is also known that the pressure p on the orifice o is $\phi \delta h$, = $\phi \delta \frac{u^2}{2\phi}$, = $\frac{1}{2} \delta o u^2$.

Now let this little surface o be supposed to move with the velocity v . The fluid would meet it with the velocity $u + v$, or $u - v$, according as it moved in the opposite or in the same direction with the efflux. In the equation $p = \frac{1}{2} \delta o u^2$, substitute $u \pm v$ for u , and we have the pressure on $o = p = \frac{\delta o}{2} (u \pm v)^2$, = $\frac{\delta o}{2} (\sqrt{2\phi h} \pm v)^2$.

This pressure is a weight, that is, a mass of matter m actuated by gravity ϕ , or $p = \phi m$, and $m = \delta o (\sqrt{h} \pm \frac{v}{\sqrt{2\phi}})^2$.

This elementary surface being immersed in a stagnant fluid, and moved with the velocity v , will sustain on one side a pressure $\delta o (\sqrt{h} + \frac{v}{\sqrt{2\phi}})^2$ and on the other side a pressure $\delta o (\sqrt{h} - \frac{v}{\sqrt{2\phi}})^2$; and the sensible resistance will be the difference of these two pressures, which is $\delta o 4 \sqrt{h} \frac{v}{\sqrt{2\phi}}$, or $\delta o 4 \sqrt{h} \frac{v}{8}$, that is, $\frac{\delta o \sqrt{h} v}{2}$, because $\sqrt{2\phi} = 8$; a quantity which is

in the subduplicate ratio of the depth under the surface of the fluid, and the simple ratio of the velocity of the resisted surface jointly.

There is nothing in experimental philosophy more certain than that the resistances are very nearly in the duplicate ratio of the velocities; and we cannot conceive by what experiments the ingenious author has supported this conclusion.

But there is, besides, what appears to us to be an ³¹Defect in essential defect in this investigation. The equation exhibits no resistance in the case of a fluid without weight. Now a theory of the resistance of fluids should exhibit the retardation arising from inertia alone, and should distinguish it from that arising from any other cause: and moreover, while it assigns an ultimate sensible resistance proportional (*ceteris paribus*) to the simple velocity, it assumes as a first principle that the pressure p is as u^2 . It also gives a false measure of the statical pressures: for these (in the case of bodies immersed in our waters at least) are made up of the pressure of the incumbent water, which is measured by h , and the pressure of the atmosphere, a constant quantity.

Whatever reason can be given for setting out with the principle that the pressure on the little surface o , moving with the velocity u , is equal to $\frac{1}{2} \delta o (u \pm v)^2$, makes it indispensably necessary to take for the velocity

u .

(A) There is something very unaccountable in these experiments. The resistances are much greater than any other author has observed.

Resistance. u , not that with which water would issue from a hole whose depth under the surface is b , but the velocity with which it will issue from a hole whose depth is $b + 33$ feet. Because the pressure of the atmosphere is equal to that of a column of water 33 feet high: for this is the acknowledged velocity with which it would rush in to the void left by the body. If therefore this velocity (which does not exist) has any share in the effort, we must have for the fluxion of pressure not $\frac{4\sqrt{b}v}{\sqrt{2p}}$ but $\frac{4\sqrt{b+33}v}{\sqrt{2p}}$. This would not only give pressure or resistances many times exceeding those that have been observed in our experiments, but would also totally change the proportions which this theory determines. It was at any rate improper to embarrass an investigation, already very intricate, with the pressure of gravity, and with two motions of efflux, which do not exist, and are necessary for making the pressures in the ratio of $u+v$ and $u-v$.

Mr Prony has been at no pains to inform his readers of his reasons for adopting this theory of resistance, so contrary to all received opinions, and to the most distinct experiments. Those of the French academy, made under greater pressures, gave a much smaller resistance; and the very experiments adduced in support of this theory are extremely deficient, wanting fully $\frac{1}{4}$ of what the theory requires. The resistances by experiment were $15\frac{1}{2}$ and $26\frac{1}{2}$, and the theory required $20\frac{1}{2}$ and 39. The equation, however, deduced from the theory is greatly deficient in the expression of the pressures caused by the accumulation and depression, stating the heights of them as $= \frac{v^2}{2p}$. They can never be so high,

because the heaped up water flows off at the sides, and it also comes in behind by the sides; so that the pressure is much less than half the weight of a column whose height is $\frac{v^2}{2p}$; both because the accumulation and de-

pression are less at the sides than in the middle, and because, when the body is wholly immersed, the accumulation is greatly diminished. Indeed in this case the final equation does not include their effects, though as real in this case as when part of the body is above water.

Upon the whole, we are somewhat surprised that an author of D'Ulloa's eminence should have adopted a theory so unnecessarily and so improperly embarrassed with foreign circumstances; and that Mr Prony should have inserted it with the explanation by which he was to abide, in a work destined for practical use.

This point, or the effect of deep immersion, is still much contested; and it is a received opinion, by many not accustomed to mathematical researches, that the resistance is greater in greater depths. This is assumed as an important principle by Mr Gordon, author of *A Theory of Naval Architecture*; but on very vague and slight grounds; and the author seems unacquainted with the manner of reasoning on such subjects. It shall be considered afterwards.

With these corrections, it may be asserted that theory and experiment agree very well in this respect, and that the resistance may be asserted to be in the duplicate ratio of the velocity.

We have been more minute on this subject, because it is the leading proposition in the theory of the ac-

tion of fluids. Newton's demonstration of it takes no notice of the manner in which the various particles of the fluid are put into motion, or the motion which each in particular acquires. He only shows, that if there be nothing concerned in the communication but pure inertia, the sum total of the motions of the particles, estimated in the direction of the bodies motion, or that of the stream, will be in the duplicate ratio of the velocity. It was therefore of importance to show that this part of the theory was just. To do this, we had to consider the effect of every circumstance which could be combined with the inertia of the fluid. All these had been foreseen by that great man, and are most briefly, though perspicuously, mentioned in the last scholium to prop. 36. B. II.

2. It appears from a comparison of all the experiments, that the impulses and resistances are very nearly in the proportion of the surfaces. They appear, however, to increase somewhat faster than the surfaces. The Chevalier Borda found that the resistance, with the same velocity, to a surface of

9 inches	} was	{	9	} instead of	{	9
16			17,535			16
36			42,750			36
81			104,737			81

The deviation in these experiments from the theory increases with the surface, and is probably much greater in the extensive surfaces of the sails of ships and wind-mills, and the hulls of ships.

3. The resistances do by no means vary in the duplicate ratio of the sines of the angles of incidence.

As this is the most interesting circumstance, having a chief influence on all the particular modifications of the resistance of fluids, and as on this depends the whole theory of the construction and working of ships, and the action of water on our most important machines, and seems most immediately connected with the mechanism of fluids, it merits a very particular consideration. We cannot do a greater service than by rendering more generally known the excellent experiments of the French academy.

Fifteen boxes or vessels were constructed, which were two feet wide, and two feet deep, and four feet long. One of them was a parallelopiped of these dimensions; the others had prows of a wedge-form, the angle ACB (fig. 7.) varying by 12° degrees from 12° to 180° ; so that the angle of incidence increased by 6° from one to another. These boxes were dragged across a very large basin of smooth water (in which they were immersed two feet) by means of a line passing over a wheel connected with a cylinder, from which the actuating weight was suspended. The motion became perfectly uniform after a very little way; and the time of passing over 96 French feet with this uniform motion was very carefully noted. The resistance was measured by the weight employed, after deducting a certain quantity (properly estimated) for friction, and for the accumulation of the water against the anterior surface. The results of the many experiments are given in the following table; where column 1st contains the angle of the prow, column 2d contains the resistance as given by the preceding theory, column 3d contains the resistance exhibited in the experiments, and column 4th contains the deviation of the experiment from the theory.

32
Impulse
and resist-
ances near-
ly in pro-
portion of
the surfa-
ces.

33
Experi-
ments of
the French
academy,
Plate
ccccxxvi.

Resistance.

I.	II.	III.	IV.
180	10000	10000	0
168	9890	9893	+3
156	9568	9578	+10
144	9045	9084	+39
132	8346	8446	+100
120	7500	7710	+210
108	6545	6925	+380
96	5523	6148	+625
84	4478	5433	+955
72	3455	4800	+1345
60	2500	4404	+1904
48	1654	4240	+2586
36	955	4142	+3187
24	432	4063	+3631
12	109	3999	+3890

The resistance to 1 square foot, French measure, moving with the velocity of 2,56 feet per second, was very nearly 7,625 pounds French.

Reducing these to English measures, we have the surface = 1,1363 feet, the velocity of the motion equal to 2,7263 feet per second, and the resistance equal to 8,234 pounds avoirdupois. The weight of a column of fresh water of this base, and having for its height the fall necessary for communicating this velocity, is 8,264 pounds avoirdupois. The resistances to other velocities were accurately proportional to the squares of the velocities.

There is great diversity in the value which different authors have deduced for the absolute resistance of water from their experiments. In the value now given nothing is taken into account but the inertia of the water. The accumulation against the forepart of the box was carefully noted, and the statical pressure backwards, arising from this cause, was subtracted from the whole resistance to the drag. There had not been a sufficient variety of experiments for discovering the share which tenacity and friction produced; so that the number of pounds set down here may be considered as somewhat superior to the mere effects of the inertia of the water. We think, upon the whole, that it is the most accurate determination yet given of the resistance to a body in motion: but we shall afterwards see reasons for believing, that the impulse of a running stream having the same velocity is somewhat greater; and this is the form in which most of the experiments have been made.

Also observe, that the resistance here given is that to a vessel two feet broad and deep and four feet long. The resistance to a plane of two feet broad and deep would probably have exceeded this in the proportion of 15,22 to 14,54, for reasons we shall see afterwards.

34 And others. From the experiments of Chevalier Buat, it appears that a body of one foot square, French measure, and two feet long, having its centre 15 inches under water, moving three French feet per second, sustained a pressure of 14,54 French pounds, or 15,63 English. This reduced in the proportion of 3^2 to $2,56^2$ gives 11,43 pounds, considerably exceeding the 8,24.

Mr Bouguer, in his *Manœuvre des Vaisseaux*, says, that he found the resistance of sea-water to a velocity of one foot to be 23 ounces *poids des Marc*.

The Chevalier Borda found the resistance of sea-water to the face of a cubic foot, moving against the water one foot per second, to be 21 ounces nearly. But

this experiment is complicated: the wave was not deduced; and it was not a plane, but a cube.

Don George d'Ulloa found the impulse of a stream of sea-water, running two feet per second on a foot square, to be $15\frac{1}{2}$ pounds English measure. This greatly exceeds all the values given by others.

From these experiments we learn, in the first place, ³⁵ that the direct resistance to a motion of a plane surface ^{Consequences from} through water, is very nearly equal to the weight of a column of water having that surface for its base, and for its height the fall producing the velocity of the motion. This is but one half of the resistance determined by the preceding theory. It agrees, however, very well with the best experiments made by other philosophers on bodies totally immersed or surrounded by the fluid; and sufficiently shows, that there must be some fallacy in the principles or reasoning by which this result of the theory is supposed to be deduced. We shall have occasion to return to this again.

But we see that the effects of the obliquity of incidence deviate enormously from the theory, and that this deviation increases rapidly as the acuteness of the prow increases. In the prow of 60° the deviation is nearly equal to the whole resistance pointed out by the theory, and in the prow of 12° it is nearly 40 times greater than the theoretical resistance.

The resistance of the prow of 90° should be one half the resistance of the base. We have not such a prow; but the medium between the resistance of the prow of 96 and 84 is 5790, instead of 500.

These experiments are very conform to those of other authors on plane surfaces. Mr Robins found the resistance of the air to a pyramid of 45° , with its apex foremost, was to that of its base as 1000 to 1411, instead of one to two. Chevalier Borda found the resistance of a cube, moving in water in the direction of the side, was to the oblique resistance, when it was moved in the direction of the diagonal, in the proportion of $5\frac{1}{2}$ to 7; whereas it should have been that of $\sqrt{2}$ to 1, or of 10 to 7 nearly. He also found, that a wedge whose angle was 90° , moving in air, gave for the proportion of the resistances of the edge and base 7281:10000, instead of 5000:10000. Also when the angle of the wedge was 60° , the resistances of the edge and base were 52 and 100, instead of 25 and 100.

In short, in all the cases of oblique plane surfaces, the resistances were greater than those which are assigned by the theory. The theoretical law agrees tolerably with observation in large angles of incidence, that is, in incidences not differing very far from the perpendicular; but in more acute prows the resistances are more nearly proportional to the sines of incidence than to their squares.

The academicians deduced from these experiments an expression of the general value of the resistance, which corresponds tolerably well with observation. Thus let α be the complement of the half angle of the prow, and let P be the direct pressure or resistance, with an incidence of 90° , and p the effective oblique pressure:

$$\text{then } p = P \times \cos^2 \alpha + 3,153 \left(\frac{\alpha}{60} \right)^{3,25}.$$

This gives for a prow of 12° an error in defect about $\frac{1}{100}$, and in larger angles it is much nearer the truth; and this is exact enough for any practice.

This

Resistance.

This is an abundantly simple formula; but if we introduce it in our calculations of the resistances of curvilinear prows, it renders them so complicated as to be almost useless; and what is worse, when the calculation is completed for a curvilinear prow, the resistance which results is found to differ widely from experiment. This shows that the motion of the fluid is so modified by the action of the most prominent part of the prow, that its impulse on what succeeds is greatly affected, so that we are not allowed to consider the prow as composed of a number of parts, each of which is affected as if it were detached from all the rest.

As the very nature of naval architecture seems to require curvilinear forms, in order to give the necessary strength, it seemed of importance to examine more particularly the deviations of the resistances of such prows from the resistances assigned by the theory. The academicians therefore made vessels with prows of a cylindrical shape; one of these was a half cylinder, and the other was one-third of a cylinder, both having the same breadth, viz. two feet, the same depth, also two feet, and the same length, four feet. The resistance of the half cylinder was to the resistance of the perpendicular prow in the proportion of 13 to 25, instead of being as 13 to 19.5. The Chevalier Borda found nearly the same ratio of the resistances of the half cylinder, and its diametrical plane when moved in air. He also compared the resistances of two prisms or wedges, of the same breadth and height. The first had its sides plane, inclined to the base in angles of 60° ; the second had its sides portions of cylinders, of which the planes were the chords, that is, their sections were arches of circles of 60° . Their resistances were as 133 to 100, instead of being as 133 to 220, as required by the theory; and as the resistance of the first was greater in proportion to that of the base than the theory allows, the resistance of the last was less.

Mr Robins found the resistance of a sphere moving in air to be to the resistance of its great circle as 1 to 2.27; whereas theory requires them to be as 1 to 2. He found, at the same time, that the absolute resistance was greater than the weight of a cylinder of air of the same diameter, and having the height necessary for acquiring the velocity. It was greater in the proportion of 49 to 40 nearly.

Borda found the resistance of the sphere moving in water to be to that of its great circle as 1000 to 2508, and it was one-ninth greater than the weight of the column of water whose height was that necessary for producing the velocity. He also found the resistance of air to the sphere was to its resistance to its great circle as 1 to 2.45.

36
The theory gives some resistances too small and others too great.

It appears, on the whole, that the theory gives the resistance of oblique plane surfaces too small, and that of curved surfaces too great; and that it is quite unfit for ascertaining the modifications of resistance arising from the figure of the body. The most prominent part of the prow changes the action of the fluid on the succeeding parts, rendering it totally different from what it would be were that part detached from the rest, and exposed to the stream with the same obliquity. It is of no consequence, therefore, to deduce any formula from the valuable experiments of the French academy. The experiments themselves are of great importance, because they give us the impulses on plane surfaces with

every obliquity. They therefore put it in our power to select the most proper obliquity in a thousand important cases. By appealing to them, we can tell what is the proper angle of the sail for producing the greatest impulse in the direction of the ship's course; or the best inclination of the sail of a wind-mill, or the best inclination of the float of a water-wheel, &c. &c. These deductions will be made in their proper places in the course of this work. We see also, that the deviation from the simple theory is not very considerable till the obliquity is great; and that, in the inclinations which other circumstances would induce us to give to the floats of water-wheels, the sails of wind-mills, and the like, the results of the theory are sufficiently agreeable to experiment, for rendering this theory of very great use in the construction of machines. Its great defect is in the impulses on curved surfaces, which puts a stop to our improvement of the science of naval architecture, and the working of ships.

But it is not enough to detect the faults of this theory: we should try to amend it, or to substitute another. It is a pity that so much ingenuity should have been thrown away in the application of a theory so defective. Mathematicians were seduced, as has been already observed, by the opportunity which it gave for exercising their calculus, which was a new thing at the time of publishing this theory. Newton saw clearly the defects of it, and makes no use of any part of it in his subsequent discussions, and plainly has used it merely as an introduction, in order to give some general notions in a subject quite new, and to give a demonstration of one leading truth, viz. the proportionality of the impulses to the squares of the velocities. While we profess the highest respect for the talents and labours of the great mathematicians who have followed Newton in this most difficult research, we cannot help being sorry that some of the greatest of them continued to attach themselves to a theory which he neglected, merely because it afforded an opportunity of displaying their profound knowledge of the new calculus, of which they were willing to ascribe the discovery to Leibnitz. It has been in a great measure owing to this that we have been so late in discovering our ignorance of the subject. Newton had himself pointed out all the defects of this theory; and he set himself to work to discover another which should be more conformable to the nature of things, retaining only such deductions from the other as his great sagacity assured him would stand the test of experiment. Even in this he seems to have been mistaken by his followers. He retained the proportionality of the resistance to the square of the velocity. This they have endeavoured to demonstrate in a manner conformable to Newton's determination of the oblique impulses of fluids; and under the cover of the agreement of this proposition with experiment, they introduced into mechanics a mode of expression, and even of conception, which is inconsistent with all accurate notions on these subjects. Newton's proposition was, that the motions communicated to the fluid, and therefore the motions lost by the body, in equal times, were as the squares of the velocities; and he conceived these as proper measures of the resistances. It is a matter of experience, that the forces or pressures by which a body must be supported in opposition to the impulses of fluids, are in this very proportion. In determining the

37
its defects pointed out by Newton.

Resistance. proportion of the direct and oblique resistances of plane surfaces, he considers the resistances to arise from mutual collisions of the surface and fluid, repeated at intervals of time too small to be perceived. But in making this comparison, he has no occasion whatever to consider this repetition; and when he assigns the proportion between the resistance of a cone and of its base, he, in fact, assigns the proportion between two simultaneous and instantaneous impulses. But the mathematicians who followed him have considered this repetition as equivalent to an augmentation of the initial or first impulse; and in this way have attempted to demonstrate that the resistances are as the squares of the velocities. When the velocity is double, each impulse is double, and the number in a given time is double; therefore, say they, the resistance, and the force which will withstand it, is quadruple; and observation confirms their deduction: yet nothing is more gratuitous and illogical. It is very true that the resistance, conceived as Newton conceives it, the loss of motion sustained by a body moving in the fluid, is quadruple; but the instantaneous impulse, and the force which can withstand it, is, by all the laws of mechanics, only double. What is the force which can withstand a double impulse? Nothing but a double impulse. Nothing but impulse can be opposed to impulse; and it is a gross misconception to think of stating any kind of comparison between impulse and pressure. It is this which has given rise to much jargon and false reasoning about the force of percussion. This is stated as infinitely greater than any pressure, and as equivalent to a pressure infinitely repeated. It forced the abettors of these doctrines at last to deny the existence of all pressures whatever, and to assert that all motion, and tendency to motion, was the result of impulse. The celebrated Euler, perhaps the first mathematician, and the lowest philosopher, of this century, says, "since motion and impulse are seen to exist, and since we see that by means of motion pressure may be produced, as when a body in motion strikes another, or as when a body moving in a curved channel presses upon it, merely in consequence of its curvilinear motion, and the exertion of a centrifugal force; and since Nature is most wisely economical in all her operations; it is absurd to suppose that pressure, or tendency to motion, has any other origin; and it is the business of a philosopher to discover by what motions any observed pressure is produced." Whenever any pressure is observed, such as the pressure of gravity, of magnetism, of electricity, of condensed air, nay, of a spring, and of elasticity and cohesion themselves, however disparate, nay, opposite, the philosopher must immediately cast about, and contrive a set of motions (creating *pro re nata* the movers) which will produce a pressure like the one observed. Having pleased his fancy with this, he cries out *supra* "this will produce the pressure;" *et frustra fit per plura quod fieri potest per pauciora*, "therefore in this way the pressure is produced." Thus the vortices of Descartes are brought back in triumph, and have produced vortices without number, which fill the universe with motion and pressure.

Such bold attempts to overturn long-received doctrines in mechanics, could not be received without much criticism and opposition; and many able dissertations appeared from time to time in defence of the common doctrines. In consequence of the many objections to

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the comparison of pure pressure with pure percussion or impulse, John Bernoulli and others were at last obliged to assert that there were no perfectly hard bodies in nature, nor could be, but that all bodies were elastic; and that in the communication of motion by percussion, the velocities of both bodies were *gradually* changed by their mutual elasticity acting during the finite but imperceptible time of the collision. This was, in fact, giving up the whole argument, and banishing percussion, while their aim was to get rid of pressure. For what is elasticity but a pressure? and how shall it be produced? To act in this instance, must it arise from a still smaller impulse? But this will require another elasticity, and so on without end.

These are all legitimate consequences of this attempt to state a comparison between percussion and pressure. Numberless experiments have been made to confirm the statement; and there is hardly an itinerant-lecturing showman who does not exhibit among his apparatus Gravesande's machine (Vol. I. plate xxxv. fig. 4). But nothing affords so specious an argument as the experimented proportionality of the impulse of fluids to the square of the velocity. Here is every appearance of the accumulation of an infinity of minute impulses, in the known ratio of the velocity, each to each, producing pressures which are in the ratio of the squares of the velocities.

The pressures are observed; but the impulses or percussions, whose accumulation produces these pressures, are only supposed. The rare fluid, introduced by Newton for the purpose already mentioned, either does not exist in nature, or does not act in the manner we have said, the particles making their impulse, and then escaping through among the rest without affecting their motion. We cannot indeed say what may be the proportion between the diameter and the distance of the particles. The first may be incomparably smaller than the second, even in mercury, the densest fluid which we are familiarly acquainted with; but although they do not touch each other, they act nearly as if they did, in consequence of their mutual attractions and repulsions. We have seen air a thousand times rarer in some experiments than in others, and therefore the distance of the particles at least ten times greater than their diameters; and yet, in this rare state, it propagates all pressures or impulses made on any part of it to a great distance, almost in an instant. It cannot be, therefore, that fluids act on bodies by impulse. It is very possible to conceive a fluid advancing with a flat surface against the flat surface of a solid. The very first and superficial particles may make an impulse; and if they were annihilated, the next might do the same: and if the velocity were double, these impulses would be double, and would be withstood by a double force, and not a quadruple, as is observed: and this very circumstance, that a quadruple force is necessary, should have made us conclude that it was not to impulse that this force was opposed. The first particles having made their stroke, and not being annihilated, must escape laterally. In their escaping, they effectually prevent every farther impulse, because they come in the way of those filaments which would have struck the body. The whole process seems to be somewhat as follows:

When the flat surface of the fluid has come into contact with the plane surface AD (fig. 6.), perpendicular

O

Resistance.

39
But a very small part of a fluid can make any impulse on a surface.

Plate
to cccxxxvi.

Resistance. to the direction DC of their motion, they must deflect to both sides equally, and in equal portions, because no reason can be assigned why more should go to either side. By this means the filament EF, which would have struck the surface in G, is deflected *before it arrives* at the surface, and describes a curved path EFIHK, continuing its rectilinear motion to I, where it is intercepted by a filament immediately adjoining to EF, on the side of the middle filament DC. The different particles of DC may be supposed to impinge in succession at C, and to be deflected at right angles; and gliding along CB, to escape at B. Each filament in succession, outwards from DC, is deflected in its turn; and being hindered from even touching the surface CB, it glides off in a direction parallel to it; and thus EF is deflected in I, moves parallel to CB from I to H, and is again deflected at right angles, and describes HK parallel to DC. The same thing may be supposed to happen on the other side of DC.

And thus it would appear, that except two filaments immediately adjoining to the line DC, which bisects the surface at right angles, no part of the fluid makes any impulse on the surface AB. All the other filaments are merely pressed against it by the lateral filaments without them, which they turn aside, and prevent from striking the surface.

Plate In like manner, when the fluid strikes the edge of a
ccccxxvi. prism or wedge ACB (fig. 7.), it cannot be said that
40 any real impulse is made. Nothing hinders us from
No impulse supposing C a mathematical angle or indivisible point,
on the edge not susceptible of any impulse, and serving merely to di-
of a prism. vide the stream. Each filament EF is effectually pre-
vented from impinging at G in the line of its direction,
and with the obliquity of incidence EGC, by the fila-
ments between EF and DC, which glide along the sur-
face CA; and it may be supposed to be deflected when
it comes to the line CF which bisects the angle DCA,
and again deflected and rendered parallel to DC at I.
The same thing happens on the other side of DC; and
we cannot in this case assert that there is any impulse.

41 The ordi- We now see plainly how the ordinary theory must be
nary theo- totally unfit for furnishing principles of naval architec-
ry of no- ture, even although a formula could be deduced from
use in na- such a series of experiments as those of the French Aca-
val archi- demy. Although we should know precisely the im-
ecture. pulse, or, to speak now more cautiously, the action, of
the fluid on a surface GL (fig. 8.) of any obliquity,
when it is alone, detached from all others, we cannot
in the smallest degree tell what will be the action of
part of a stream of fluid advancing towards it, with the
same obliquity, when it is preceded by an adjoining sur-
face CG, having a different inclination; for the fluid
will not glide along GL in the same manner as if it
made part of a more extensive surface having the same
inclination. The previous deflexions are extremely dif-
ferent in these two cases; and the previous deflections
are the only changes which we can observe in the mo-
tions of the fluid, and the only causes of that pressure
which we observe the body to sustain, and which we
call the impulse on it. This theory must, therefore, be
quite unfit for ascertaining the action on a curved sur-
face, which may be considered as made up of an indefi-
nite number of successive planes.

We now see with equal evidence how it happens that

the action of fluids on solid bodies may and must be op- *Resistance.*
posed by pressures, and may be compared with and mea-
sured by the pressure of gravity. We are not compa- ⁴²
ring forces of different kinds, percussions with pressures, *Pressure,*
but pressures with each other. Let us see whether *the action*
this view of the subject will afford us any method of
comparison or absolute measurement.

When a filament of fluid, that is, a row of corpuscles, are turned out of their course EF (fig. 6.), and forced to take another course IH, force is required to produce this change of direction. The filament is prevented from proceeding by other filaments which lie between it and the body, and which deflect it in the same manner as if it were contained in a bended tube, and it will press on the concave filament next to it as it would press on the concave side of the tube. Suppose such a bended tube ABE (fig. 9.), and that a ball A is projected along it with any velocity, and moves in it without friction: it is demonstrated, in elementary mechanics, that the ball will move with undiminished velocity, and will press on every point, such as B, of the concave side of the tube, in a direction BF perpendicular to the plane CBD, which touches the tube in the point B. This pressure on the adjoining filament, on the concave side of its path, must be withstood by that filament which deflects it; and it must be propagated across that filament to the next, and thus augment the pressure upon that next filament already pressed by the deflection of the intermediate filament; and thus there is a pressure towards the middle filament, and towards the body, arising from the deflection of all the outer filaments; and their accumulated sum must be conceived as immediately exerted on the middle filaments and on the body, because a perfect fluid transmits every pressure undiminished.

The pressure BF is equivalent to the two BH, BG, one of which is perpendicular, and the other parallel, to the direction of the original motion. By the first (taken in any point of the curvilinear motion of any filament), the two halves of the stream are pressed together; and in the case of fig. 6. and 7. exactly balance each other. But the pressures, such as BG, must be ultimately withstood by the surface ACB; and it is by these accumulated pressures that the solid body is urged down the stream; and it is these accumulated pressures which we observe and measure in our experiments. We shall anticipate a little, and say that it is most easily demonstrated, that when a ball A (fig. 9.) moves with undiminished velocity in a tube so incurvated that its axis at E is at right angles to its axis at A, the accumulated action of the pressures, such as BG, taken for every point of the path, is precisely equal to the force which would produce or extinguish the original motion.

This being the case, it follows most obviously, that if the two motions of the filaments are such as we have described and represented by fig. 6. the whole pressure in the direction of the stream, that is, the whole pressure which can be observed on the surface, is equal to the weight of a ⁴³
column of fluid having the surface for its base, and twice *Whether*
the fall productive of the velocity for its height, pre- *they be*
cisely as Newton deduced it from other considerations; *elastic or*
and it seems to make no odds whether the fluid be elas- *not.*
tic or unelastic, if the deflections and velocities are the same. Now it is a fact, that no difference in this re-
spect

Resistance. spect can be observed in the actions of air and water; and this had always appeared a great defect in Newton's theory: but it was only a defect of the theory attributed to him. But it is also true, that the observed action is but one-half of what is just now deduced from this improved view of the subject. Whence arises this difference? The reason is this: We have given a very erroneous account of the motions of the filaments. A filament EF does not move as represented in fig. 6. with two rectangular inflexions at I and at H, and a path IH between them parallel to CB. The process of nature is more like what is represented in fig. 10. *It is observed*, that at the anterior part of the body AB, there remains a quantity of fluid ADB, almost, if not altogether, stagnant, of a singular shape, having two curved concave sides AaD, BbD, along which the middle filaments glide. This fluid is very slowly changed.—

44
Important
experi-
ments by
Sir Charles
Knowles.

The late Sir Charles Knowles, an officer of the British navy, equally eminent for his scientific professional knowledge and for his military talents, made many beautiful experiments for ascertaining the paths of the filaments of water. At a distance up the stream, he allowed small jets of a coloured fluid, which did not mix with water, to make part of the stream; and the experiments were made in troughs with sides and bottom of plate-glass. A small taper was placed at a considerable height above, by which the shadows of the coloured filaments were most distinctly projected on a white plane held below the trough, so that they were accurately drawn with a pencil. A few important particulars may be here mentioned.

The still water ADC lasted for a long while before it was renewed; and it seemed to be gradually wasted by abrasion, by the adhesion of the surrounding water, which gradually licked away the outer parts from D to A and B; and it seemed to renew itself in the direction CD, opposite to the motion of the stream. There was, however, a considerable intricacy and eddy in this motion. Some (seemingly superficial) water was continually, but slowly, flowing outward from the line DC, while other water was seen within and below it, coming inwards and going backwards.

The coloured lateral filaments were most constant in their form, while the body was the same, although the velocity was in some cases quadrupled. Any change which this produced seemed confined to the superficial filaments.

As the filaments were deflected, they were also constricted, that is, the curved parts of the filaments were nearer each other than the parallel straight filaments up the stream; and this constriction was more considerable as the prow was more obtuse and the deflexion greater.

The inner filaments were ultimately more deflected than those without them; that is, if a line be drawn touching the curve EFIH in the point H of contrary flexure, where the concavity begins to be on the side next the body, the angle HKC, contained between the axis and this tangent line, is so much the greater as the filament is nearer the axis.

When the body exposed to the stream was a box of upright sides, flat bottom, and angular prow, like a wedge, having its edge also upright, the filaments were not all deflected laterally, as theory would make us expect; but the filaments near the bottom were also deflected downwards as well as laterally, and glided along

at some distance under the bottom, forming lines of Resistance. double curvature.

The breadth of the stream that was deflected was much greater than that of the body; and the sensible deflection begun at a considerable distance up the stream, especially in the outer filaments.

Lastly, the form of the curves was greatly influenced by the proportion between the width of the trough and that of the body. The curvature was always less when the trough was very wide in proportion to the body.

Great varieties were also observed in the motion or velocity of the filaments. In general, the filaments increased in velocity outwards from the body to a certain small distance, which was nearly the same in all cases, and then diminished all the way outward. This was observed by inequalities in the colour of the filaments, by which one could be observed to outstrip another. The retardation of those next the body seemed to proceed from friction; and it was imagined that without this the velocity there would always have been greatest.

These observations give us considerable information ⁴⁵With inference from them. respecting the mechanism of these motions, and the action of fluids upon solids. The pressure in the duplicate ratio of the velocities comes here again into view. We found, that although the velocities were very different, the curves were precisely the same. Now the observed pressures arise from the transverse forces by which each particle of a filament is retained in its curvilinear path; and we know that the force by which a body is retained in any curve is directly as the square of the velocity, and inversely as the radius of curvature. The curvature, therefore, remaining the same, the transverse forces, and consequently the pressure on the body, must be as the square of the velocity: and, on the other hand, we can see pretty clearly (indeed it is rigorously demonstrated by D'Alembert), that whatever be the velocities, the curves *will* be the same. For it is known in hydraulics, that it requires a fourfold or ninefold pressure to produce a double or triple velocity. And as all pressures are propagated through a perfect fluid without diminution, this fourfold pressure, while it produces a double velocity, produces also fourfold transverse pressures, which will retain the particles, moving twice as fast, in the same curvilinear paths. And thus we see that the impulses, as they are called, and resistances of fluids, have a certain relation to the weight of a column of fluid, whose height is the height necessary for producing the velocity. How it happens that a plane surface, immersed in an extended fluid, sustains just half the pressure which it would have sustained had the motions been such as are sketched in figure 6th, is a matter of more curious and difficult investigation. But we see evidently that the pressure must be less than what is there assigned; for the stagnant water a-head of the body greatly diminishes the ultimate deflections of the filaments: And it may be demonstrated, that when the part BE of the canal, fig. 9. is inclined to the part AB in an angle less than 90°, the pressures BG along the whole canal are as the versed sine of the ultimate angle of deflection, or the versed sine of the angle which the part BE makes with the part AB. Therefore, since the deflexions resemble more the sketch given in fig. 10. the accumulated sum of all these forces BG of fig. 9. must be less than the similar sum corresponding to fig. 6. that is, less than

Resistance. the weight of the column of fluid, having twice the productive height for its height. How it is just one-half, shall be our next inquiry.

And here we must return to the labours of Sir Isaac Newton. After many beautiful observations on the nature and mechanism of continued fluids, he says, that the resistance which they occasion is but one-half of that occasioned by the rare fluid which had been the subject of his former proposition; "which truth," (says he, with his usual caution and modesty), "I shall endeavour to show."

46
Investiga-
tions of
Newton

He then enters into another, as novel and as difficult an investigation, viz. the laws of hydraulics, and endeavours to ascertain the motion of fluids through orifices when urged by pressures of any kind. He endeavours to ascertain the velocity with which a fluid escapes through a horizontal orifice in the bottom of a vessel, by the action of its weight, and the pressure which this vein of fluid will exert on a little circle which occupies part of the orifice. To obtain this, he employs a kind of approximation and trial, of which it would be extremely difficult to give an extract; and then, by increasing the diameter of the vessel and of the hole to infinity, he accommodates his reasoning to the case of a plane surface exposed to an indefinitely extended stream of fluid; and lastly, giving to the little circular surface the motion which he had before ascribed to the fluid, he says, that the resistance to a plane surface moving through an unelastic continuous fluid, is equal to the weight of a column of the fluid whose height is one-half of that necessary for acquiring the velocity; and he says, that the resistance of a globe is, in this case, the same with that of a cylinder of the same diameter. The resistance, therefore, of the cylinder or circle is four times less, and that of the globe is twice less than their resistances on a rare elastic medium.

47
Liable to
great ob-
jections,

But this determination, though founded on principles or assumptions, which are much nearer to the real state of things, is liable to great objections. It depends on his method for ascertaining the velocity of the issuing fluid; a method extremely ingenious, but defective. The cataract, which he supposes, cannot exist as he supposes, descending by the full action of gravity, and surrounded by a funnel of stagnant fluid. For, in such circumstances, there is nothing to balance the hydrostatical pressure of this surrounding fluid; because the whole pressure of the central cataract is employed in producing its own descent. In the next place, the pressure which he determines is beyond all doubt only half of what is observed on a plane surface in all our experiments. And, in the third place, it is repugnant to all our experience, that the resistance of a globe or of a pointed body is as great as that of its circular base. His reasons are by no means convincing. He supposes them placed in a tube or canal; and since they are supposed of the same diameter, and therefore leave equal spaces at their sides, he concludes, that because the water escapes by their sides with the same velocity, they will have the same resistance. But this is by no means a necessary consequence. Even if the water should be allowed to exert equal pressures on them, the pressures being perpendicular to their surfaces, and these surfaces being inclined to the axis, while in the case of the base of a cylinder it is in the direction of the axis, there must be a difference in

the accumulated or compound pressure in the direction of the axis. He indeed says, that in the case of the cylinder or the circle obstructing the canal, a quantity of water remains stagnant on its upper surface; viz. all the water whose motion would not contribute to the most ready passage of the fluid between the cylinder and the sides of the canal or tube; and that this water may be considered as frozen. If this be the case, it is indifferent what is the form of the body that is covered with this mass of frozen or stagnant water. It may be a hemisphere or a cone; the resistance will be the same.—But Newton by no means assigns, either with precision or with distinct evidence, the form and magnitude of this stagnant water, so as to give confidence in the results. He contents himself with saying, that it is that water whose motion is not necessary or cannot contribute to the most easy passage of the water.

There remains, therefore, many imperfections in this theory. But notwithstanding these defects, we cannot but admire the efforts and sagacity of this great philosopher, who, after having discovered so many sublime truths of mechanical nature, ventured to trace out a path for the solution of a problem which no person had yet attempted to bring within the range of mathematical investigation. And his solution, though inaccurate, shines throughout with that inventive genius and that fertility of resource, which no man ever possessed in so eminent a degree.

Those who have attacked the solution of Sir Isaac Newton have not been more successful. Most of them, instead of principles, have given a great deal of calculus; and the chief merit which any of them can claim, is that of having deduced some single proposition which happens to quadrate with some single case of experiment, while their general theories are either inapplicable, from difficulty and obscurity, or are discordant with more general observation.

We must, however, except from this number Daniel Bernoulli, who was not only a great geometer, but one of the first philosophers of the age. He possessed all the talents, and was free from the faults of that celebrated family; and while he was the mathematician of Europe who penetrated farthest in the investigation of this great problem, he was the only person who felt, or at least who acknowledged, its great difficulty.

In the 2d volume of the *Comment. Petropol.* 1727, he proposes a formula for the resistance of fluids, deduced from considerations quite different from those on which Newton founded his solution. But he delivers it with modest diffidence; because he found that it gave a resistance four times greater than experiment. In the same dissertation he determines the resistance of a sphere to be one half of that of its great circle. But in his subsequent theory of Hydrodynamics (a work which must ever rank among the first productions of the age, and is equally eminent for refined and elegant mathematics, and ingenious and original thoughts in dynamics), he calls this determination in question. It is indeed founded on the same hypothetical principles which have been unskilfully detached from the rest of Newton's physics, and made the ground-work of all the subsequent theories on this subject.

In 1741 Mr Daniel Bernoulli published another dissertation

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Bernoulli's
general for-
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ed on hy-
pothesis.

⁵⁰ He treats the subject in a particular case with great precision. Resistance. fertation (in the 8th volume of the *Com. Petropol.*) on the action and resistance of fluids, limited to a very particular case; namely, to the impulse of a vein of fluid falling perpendicularly on an infinitely extended plane surface. This he demonstrates to be equal to the weight of a column of the fluid whose base is the area of the vein, and whose height is twice the fall producing the velocity. This demonstration is drawn from the true principles of mechanics and the acknowledged laws of hydraulics, and may be received as a strict physical demonstration. As it is the only proposition in the whole theory that has as yet received a demonstration accessible to readers not versant in all the refinement of modern analysis; and as the principles on which it proceeds will undoubtedly lead to a solution of every problem which can be proposed, once that our mathematical knowledge shall enable us to apply them—we think it our duty to give it in this place, although we must acknowledge, that this problem is so very limited, that it will hardly bear an application to any case that differs but a little from the express conditions of the problem. There do occur cases however in practice, where it may be applied to very great advantage.

Daniel Bernoulli gives two demonstrations; one of which may be called a popular one, and the other is more scientific and introductory to further investigation. We shall give both.

⁵¹ Determines the action exerted in the efflux of a vein of fluid. Bernoulli first determines the whole action exerted in the efflux of the vein of fluid. Suppose the velocity of efflux v is that which would be acquired by falling through the height h . It is well known that a body moving during the time of this fall with the velocity v would describe a space $2h$. The effect, therefore, of the hydraulic action is, that in the time t of the fall h , there issues a cylinder or prism of water whose base is the cross section / or area of the vein, and whose length is $2h$. And this quantity of matter is now moving with the velocity v . The quantity of motion, therefore, which is thus produced is $2shv$; and this quantity of motion is produced in the time t . And this is the accumulated effect of all the expelling forces, estimated in the direction of the efflux. Now, to compare this with the exertion of some pressing power with which we are familiarly acquainted, let us suppose this pillar $2sh$ to be frozen, and, being held in the hand, to be dropped. It is well known, that in the time t it will fall through the height h , and will acquire the velocity v , and now possesses the quantity of motion $2shv$ —and all this is the effect of its weight. The weight, therefore, of the pillar $2sh$ produces the same effect, and in the same time, and (as may easily be seen) in the same gradual manner, with the expelling forces of the fluid in the vessel, which expelling forces arise from the pressure of all the fluid in the vessel. Therefore the accumulated hydraulic pressure, by which a vein of a heavy fluid is forced out through an orifice in the bottom or side of a vessel, is equal (when estimated in the direction of the efflux) to the weight of a column of the fluid, having for its base the section of the vein, and twice the fall productive of the velocity of efflux for its height.

Plate ^{ccccxxvi.} Now let ABDC (fig. 11.) be a quadrangular vessel with upright plane sides, in one of which is an orifice EF. From every point of the circumference of this

orifice, suppose horizontal lines Ee , Ff , &c. which will mark a similar surface on the opposite side of the vessel. Suppose the orifice EF to be shut. There can be no doubt but that the surfaces EF and ef will be equally pressed in opposite directions. Now open the orifice EF; the water will rush out, and the pressure on EF is now removed. There will therefore be a tendency in the vessel to move back in the direction Ee . And this tendency must be precisely equal and opposite to the whole effort of the expelling forces. This is a conclusion as evident as any proposition in mechanics. It is thus that a gun recoils and a rocket rises in the air; and on this is founded the operation of Mr Parents or Dr Barker's mill, described in all treatises of mechanics, and most learnedly treated by Euler in the Berlin Memoirs.

Now, let this stream of water be received on a circular plane MN, perpendicular to its axis, and let this circular plane be of such extent, that the vein escapes from its sides in an infinitely thin sheet, the water flowing off in a direction parallel to the plane. The vein by this means will expand into a trumpet-like shape, having curved sides, EKG, FLH. We abstract at present the action of gravity which would cause the vein to bend downwards, and occasion a greater velocity at H than at G; and we suppose the velocity equal in every point of the circumference. It is plain, that if the action of gravity be neglected after the water has issued through the orifice EF, the velocity in every point of the circumference of the plane MN will be that of the efflux through EF.

Now, because EKG is the natural shape assumed by the vein, it is plain, that if the whole vein were covered by a tube or mouth-piece, fitted to its shape, and perfectly polished, so that the water shall glide along it, without any friction (a thing which we may always suppose), the water will exert no pressure whatever on this trumpet mouth-piece. Lastly, let us suppose that the plane MN is attached to the mouth-piece by some bits of wire, so as to allow the water to escape all round by the narrow chink between the mouth-piece and the plane: We have now a vessel consisting of the upright part ABDC, the trumpet GKEFLH, and the plane MN; and the water is escaping from every point of the circumference of the chink GHNH with the velocity v . If any part of this chink were shut up, there would be a pressure on that part equivalent to the force of efflux from the opposite part. Therefore, when all is open, these efforts of efflux balance each other all round. There is not therefore any tendency in this compound vessel to move to any side. But take away the plane MN, and there would immediately arise a pressure in the direction Ee equal to the weight of the column $2sh$. This is therefore balanced by the pressure on the circular plane MN, which is therefore equal to this weight, and the proposition is demonstrated.

A number of experiments were made by Professor Kraft at St Petersburg, by receiving the vein on a plane MN (fig. 11.) which was fastened to the arm of a balance OPQ, having a scale R hanging on the opposite arm. The resistance or pressure on the plane was measured by weights put into the scale R; and the velocity of the jet was measured by means of the distance KH, to which it spouted on a horizontal plane.

The

Resistance.
52
Difference
between
this theory
and experi-
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counted
for.

The results of these experiments were as conformable to the theory as could be wished. The resistance was always a little less than what the theory required, but greatly exceeded its half; the result of the generally received theories. This defect should be expected; for the demonstration supposes the plane MN to be infinitely extended, so that the film of water which issues through the chink may be accurately parallel to the plane. This never can be completely effected. Also it was supposed, that the velocity was justly measured by the amplitude of the parabola EGK. But it is well known that the very putting the plane MN in the way of the jet, though at the distance of an inch from the orifice, will diminish the velocity of the efflux through this orifice. This is easily verified by experiment. Observe the time in which the vessel will be emptied when there is no plane in the way. Repeat the experiment with the plane in its place; and more time will be necessary. The following is a note of a course of experiments, taken as they stand, without any selection.

	N ^o 1	2	3	4	5	6
Resist. by theory	1701	1720	1651	1602	1528	1072
Resist. by experiment	1403	1463	1486	1401	1403	1021
Difference	298	257	165	201	125	51

In order to demonstrate this proposition in such a manner as to furnish the means of investigating the whole mechanism and action of moving fluids, it is necessary to premise an elementary theorem of curvilinear motions.

Plate
ccccxxvi.

If a particle of matter describes a curve line ABCE (fig. 13.) by the continual action of deflecting forces, which vary in any manner, both with respect to intensity and direction, and if the action of these forces, in every point of the curve, be resolved into two directions, perpendicular and parallel to the initial direction AK; then,

1. The accumulated effect of the deflecting forces, estimated in a direction AD perpendicular to AK, is to the final quantity of motion as the sine of the final change of direction is to radius.

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His propo-
sition de-
monstrated.

Let us first suppose that the accelerating forces act by starts, at equal intervals of time, when the body is in the points A, B, C, E. And let AN be the deflecting force, which, acting at A, changes the original direction AK to AB. Produce AB till BH = AB, and complete the parallelogram BFCH. Then FB is the force which, by acting at B, changed the motion BH (the continuation of AB) to BC. In like manner make Cb (in BC produced) equal to BC, and complete the parallelogram CfEb. Cf is the deflecting force at C, &c. Draw BO parallel to AN, and GBK perpendicular to AK. Also draw lines through C and E perpendicular to AK, and draw through B and C lines parallel to AK. Draw also HL, *h*l perpendicular, and FG, HI, *h*i, parallel to AK.

It is plain that BK is BO or AN estimated in the direction perpendicular to AK, and that BG is BF estimated in the same way. And since BH = AB, HL or IM is equal to BK. Also CI is equal to BG. Therefore CM is equal to AP + BG. By similar reasoning it appears that $Em = Ei + h\ell = Cg + CM = Cg + BG + AP$.

Therefore if CE be taken for the measure of the final velocity or quantity of motion, Em will be the accumulated effect of the deflecting forces estimated in the direction AD perpendicular to AK. But Em is

to CE as the sine of mCE is to radius; and the angle mCE is the angle contained between the initial and final directions, because Cm is parallel to AK. Now let the intervals of time diminish continually and the frequency of the impulses increase. The deflection becomes ultimately continuous, and the motion curvilinear, and the proposition is demonstrated.

We see that the initial velocity and its subsequent changes do not affect the conclusion, which depends entirely on the final quantity of motion.

2. The accumulated effect of the accelerating forces, when estimated in the direction AK of the original motion, or in the opposite direction, is equal to the difference between the initial quantity of motion and the product of the final quantity of motion by the cosine of the change of direction.

$$\begin{aligned} \text{For } Cm &= C l - m l, = BM - f q \\ BM &= BL - ML, = AK - FG \\ AK &= AO - OK, = AO - PN. \end{aligned}$$

Therefore $PN + FG + fQ$ (the accumulated impulse in the direction OA) = $AO - CM$, = $AO - CE \times \text{co- sine of } ECM$.

Cor. 1. The same action, in the direction opposite to that of the original motion, is necessary for causing a body to move at right angles to its former direction as for stopping its motion. For in this case, the cosine of the change of direction is = 0, and $AO - CE \times \text{co sine } ECM = AO - 0, = AO$, = the original motion.

Cor. 2. If the initial and final velocities are the same, the accumulated action of the accelerating forces, estimated in the direction OA, is equal to the product of the original quantity of motion by the versed sine of the change of direction.

The application of these theorems, particularly the second, to our present purpose is very obvious. All the filaments of the jet were originally moving in the direction of its axis, and they are finally moving along the resisting plane, or perpendicular to their former motion. Therefore their transverse forces in the direction of the axis are (*in cumulo*) equal to the force which would stop the motion. For the aggregate of the simultaneous forces of every particle in the whole filament is the same with that of the successive forces of one particle, as it arrives at different points of its curvilinear path. All the transverse forces, estimated in a direction perpendicular to the axis of the vein, precisely balance and sustain each other; and the only forces which can produce a sensible effect are those in a direction parallel to the axis. By these all the inner filaments are pressed towards the plane MN, and must be withstood by it. It is highly probable, nay certain, that there is a quantity of stagnant water in the middle of the vein which sustains the pressures of the moving filaments without it, and transmits it to the solid plane. But this does not alter the case. And, fortunately, it is of no consequence what changes happen in the velocities of the particles while each is describing its own curve. And it is from this circumstance, peculiar to this particular case of perpendicular impulse, that we are able to draw the conclusion. It is by no means difficult to demonstrate that the velocity of the external surface of this jet is constant, and indeed of every jet which is not acted on by external forces after it has quitted the orifice: but this discussion is quite unnecessary here. It is however extremely difficult to ascertain, even in this most simple case,

Resistance. case, what is the velocity of the internal filaments in the different points of their progress.

Such is the demonstration which Mr Bernouilli has given of this proposition. Limited as it is, it is highly valuable, because derived from the true principles of hydraulics.

54
His theory
attempted
in vain to
be rendered
general.

He hoped to render it more extensive and applicable to oblique impulses, when the axis AC of the vein (fig. 13. n° 2.) is inclined to the plane in an angle ACN. But here all the simplicity of the case is gone, and we are now obliged to ascertain the motion of each filament. It might not perhaps be impossible to determine what must happen in the plane of the figure, that is, in a plane passing through the axis of the vein, and perpendicular to the plane MN. But even in this case it would be extremely difficult to determine how much of the fluid will go in the direction EKG, and what will go in the path FLH, and to ascertain the form of each filament, and the velocity in its different points. But in the real state of the case, the water will dissipate from the centre C on every side; and we cannot tell in what proportions. Let us however consider a little what happens in the plane of the figure, and suppose that all the water goes either in the course EKG or in the course FLH. Let the quantities of water which take these two courses have the proportions of p and π . Let $\sqrt{2a}$ be the velocity at A, $\sqrt{2b}$ be the velocity at G, and $\sqrt{2\beta}$ be the velocity at H. ACG and ACH are the two changes of direction, of which let c and $-c$ be the cosines. Then, adopting the former reasoning, we have the pressure of the watery plate GKEACM on the plane in the di-

rection AC = $\frac{p}{p+\pi} \times 2a - 2cb$, and the pressure of the

plate HLFACN = $\frac{\pi}{p+\pi} \times 2a + 2c\beta$, and their sum

= $\frac{p \times 2a - 2cb + \pi \times 2a + 2c\beta}{p+\pi}$; which being multiplied by

the sine of ACM or $\sqrt{1-c^2}$, gives the pressure perpendicular to the plane MN = $\frac{p \times 2a - 2cb + \pi \times 2a + 2c\beta}{p+\pi} \sqrt{1-c^2}$.

But there remains a pressure in the direction perpendicular to the axis of the vein, which is not balanced, as in the former case, by the equality on opposite sides of the axis. The pressure arising from the water which escapes at G has an effect opposite to that produced by the water which escapes at H. When this is taken into account, we shall find that their joint ef-

forts perpendicular to AC are $\frac{p-\pi}{p+\pi} \times 2a\sqrt{1-c^2}$, which, being multiplied by the cosine of ACM, gives the action perpendicular to MN = $\frac{p-\pi}{p+\pi} \times 2ac\sqrt{1-c^2}$.

The sum, or joint effort of all these pressures is

$\frac{p \times 2a - 2cb + \pi \times 2a + 2c\beta}{p+\pi} \sqrt{1-c^2} + \frac{p-\pi}{p+\pi} \times 2ac\sqrt{1-c^2}$.

Thus, from this case, which is much simpler than can happen in nature, seeing that there will always be a lateral efflux, the determination of the impulse is as uncertain and vague as it was sure and precise in the former case.

Resistance. It is therefore without proper authority that the absolute impulse of a vein of fluid on a plane which receives it wholly, is asserted to be proportional to the sine of incidence. If indeed we suppose the velocity in G and H are equal to that at A, then $b=\beta=a$, and the whole impulse is $2a\sqrt{1-c^2}$, as is commonly supposed. But this cannot be. Both the velocity and quantity at H are less than those at G. Nay, frequently there is no efflux on the side H when the obliquity is very great. We may conclude in general, that the oblique impulse will always bear to the direct impulse a greater proportion than that of the sine of incidence to radius. If the whole water escapes at G, and none goes off laterally, the pressure will be $2a+2ac-2bc \times \sqrt{1-c^2}$. The experiments of the Abbé Bossut show in the plainest manner that the pressure of a vein, striking obliquely on a plane which receives it wholly, diminishes faster than in the ratio of the square of the sine of incidence; whereas, when the oblique plane is wholly immersed in the stream, the impulse is much greater than in this proportion, and in great obliquities is nearly as the sine.

Nor will this proposition determine the impulse of a fluid on a plane wholly immersed in it, even when the impulse is perpendicular to the plane. The circumstance is now wanting on which we can establish a calculation, namely, the angle of final deflection. Could this be ascertained for each filament, and the velocity of the filament, the principles are completely adequate to an accurate solution of the problem. In the experiments which we mentioned to have been made under the inspection of Sir Charles Knowles, a cylinder of six inches diameter was exposed to the action of a stream moving precisely one foot per second; and when certain deductions were made for the water which was held adhering to the posterior base (as will be noticed afterwards), the impulse was found equal to $3\frac{1}{8}$ ounces avoirdupois. There were 36 coloured filaments distributed on the stream, in such situations as to give the most useful indications of their curvature. It was found necessary to have some which passed under the body and some above it; for the form of these filaments, at the same distance from the axis of the cylinder, was considerably different: and those filaments which were situated in planes neither horizontal nor vertical took a double curvature. In short, the curves were all traced with great care, and the deflecting forces were computed for each, and reduced to the direction of the axis; and they were summed up in such a manner as to give the impulse of the whole stream. The deflections were marked as far a-head of the cylinder as they could be assuredly observed. By this method the impulse was computed to be $2\frac{1}{8}$ ounces, differing from observation $\frac{1}{8}$ of an ounce, or about $\frac{1}{8}$ of the whole; a difference which may most reasonably be ascribed to the adhesion of the water, which must be most sensible in such small velocities. These experiments may therefore be considered as giving all the confirmation that can be desired of the justness of the principles. This indeed hardly admits of a doubt: but, alas! it gives us but small assistance; for all this is empirical, in as far as it leaves us in every case the task of observing the form of the curves and the velocities in their different points. To derive service from this most judicious method of Daniel Bernoulli, we must discover some method of determining,

a priori,

Resistance. *a priori*, what will be the motion of the fluid whose course is obstructed by a body of any form. And here we cannot omit taking notice of the casual observation of Sir Isaac Newton when attempting to determine the resistance of the plane surface or cylinder, or sphere exposed to a stream moving in a canal. He says that the form of the resisting surface is of less consequence, because there is always a quantity of water stagnant upon it, and which may therefore be considered as frozen; and he therefore considers that water only whose motion is necessary for the most expeditious discharge of the water in the vessel. He endeavours to discriminate that water from the rest; and although it must be acknowledged that the principle which he assumes for this purpose is very gratuitous, because it only shows that *if certain portions of the water*, which he determines very ingeniously, were really frozen, the rest will issue as he says, and will exert the pressure which he assigns; still we must admire his fertility of resource, and his sagacity in thus foreseeing what subsequent observation has completely confirmed. We are even disposed to think, that in this casual observation Sir Isaac Newton has pointed out the only method of arriving at a solution of the problem; and that if we could discover *what motions are not necessary for the most expeditious passage of the water*, and could thus determine the form and magnitude of the stagnant water which adheres to the body, we should much more easily ascertain the real motions which occasion the observed resistance. We are here disposed to have recourse to the economy of nature, the improper use of which we have sometimes taken the liberty of reprehending. Mr Maupertuis published as a great discovery his principle of smallest action, where he showed that in all the mutual actions of bodies the quantity of action was a minimum; and he applied this to the solution of many difficult problems with great success, imagining that he was really reasoning from a contingent law of nature, selected by its infinitely wise Author, viz. that in all occasions there is the smallest possible exertion of natural powers. Mr D'Alembert has, however, shown (*vid. Encyclopédie Française, ACTION*) that this was but a whim, and that the minimum observed by Maupertuis is merely a minimum of calculus, peculiar to a formula which happens to express a combination of mathematical quantities which frequently occurs in our way of considering the phenomena of nature, but which is no natural measure of action.

55
A method
recommended
for obtaining a
general
theory.

But the chevalier D'Arcy has shown, that in the trains of natural operations which terminate in the production of motion in a particular direction, the intermediate communications of motion are such that the smallest possible quantity of motion is produced. We seem obliged to conclude, that this law will be observed in the present instance; and it seems a problem not above our reach to determine the motions which result from it. We would recommend the problem to the eminent mathematicians in some simple case, such as the proposition already demonstrated by Daniel Bernoulli, or the perpendicular impulse on a cylinder included in a tubular canal; and if they succeed in this, great things may be expected. We think that experience gives great encouragement. We see that the resistance to a plane surface is a very small matter greater than the weight of a column of the fluid having the fall productive of

the velocity for its height, and the small excess is most probably owing to adhesion, and the measure of the real resistance is probably precisely this weight. The velocity of a spouting fluid was found, in fact, to be that acquired by falling from the surface of the fluid; and it was by looking at this, as at a pole star, that Newton, Bernoulli, and others, have with great sagacity and ingenuity discovered much of the laws of hydraulics, by searching for principles which would give this result. We may hope for similar success.

In the mean time, we may receive this as a physical truth, that the perpendicular impulse or resistance of a plane surface, wholly immersed in the fluid, is equal to the weight of the column having the surface for its base, and the fall producing the velocity for its height.

This is the medium result of all experiments made in these precise circumstances. And it is confirmed by a set of experiments of a kind wholly different, and which seem to point it out more certainly as an immediate consequence of hydraulic principles.

If Mr Pitot's tube be exposed to a stream of fluid issuing from a reservoir or vessel, as represented in fig. 14. with the open mouth I pointed directly against the stream, the fluid is observed to stand at K in the upright tube, precisely on a level with the fluid AB in the reservoir. Here is a most unexceptionable experiment, in which the impulse of the stream is actually opposed to the hydrostatical pressure of the fluid on the tube. Pressure is in this case opposed to pressure, because the issuing fluid is deflected by what stays in the mouth of the tube, in the same way in which it would be deflected by a firm surface. We shall have occasion by and by to mention some most valuable and instructive experiments made with this tube.

It was this which suggested to the great mathematician Euler another theory of the impulse and resistance of fluids, which must not be omitted, as it is applied in his elaborate performance *On the Theory of the Construction and Working of Ships*, in two volumes 4to, which was afterwards abridged and used as a text-book in some marine academies. He supposes a stream of fluid ABCD (fig. 15.), moving with any velocity, to strike the plane BD perpendicularly, and that part of it goes through a hole EF, forming a jet EGHF. Mr Euler says, that the velocity of this jet will be the same with the velocity of the stream. Now compare this with an equal stream issuing from a hole in the side of a vessel with the same velocity. The one stream is urged out by the pressure occasioned by the impulse of the fluid; the other is urged out by the pressure of gravity. The effects are equal, and the modifying circumstances are the same. The causes are therefore equal, and the pressure occasioned by the impulse of a stream of fluid, moving with any velocity, is equal to the weight of a column of fluid whose height is productive of this velocity, &c. He then determines the oblique impulse by the resolution of motion, and deduces the common rules of resistance, &c.

But all this is without just grounds. This gentleman was always satisfied with the slightest analogies which would give him an opportunity of exhibiting his great dexterity in algebraic analysis, and was not afterwards startled by any discordancy with observation. *Analysi magis fidendum* is a frequent assertion with him.

Though

56
Experiment
by Mr Pi-
tot's tube.
Plate
ccccxxvi.

57
Euler's
theory.

Resistance. Though he wrote a large volume, containing a theory of light and colours totally opposite to Newton's, he has published many dissertations on optical phenomena on the Newtonian principles, expressly because his own principles *non ideo facile ansum præbebat analysi instru-*

58
Without
foundation.

Not a shadow of argument is given for the leading principle in this theory, viz. that the velocity of the jet is the same with the velocity of the stream. None can be given, but saying that the pressure is equivalent to its production; and this is assuming the very thing he labours to prove. The matter of fact is, that the velocity of the jet is greater than that of the stream, and may be greater almost in any proportion. Which curious circumstance was discovered and ingeniously explained long ago by Daniel Bernoulli in his *Hydrodynamica*. It is evident that the velocity must be greater. Were a stream of sand to come against the plane, what goes through would indeed preserve its velocity unchanged: but when a real fluid strikes the plane, all that does not pass through is deflected on all sides; and by these deflections forces are excited, by which the filaments which surround the cylinder immediately fronting the hole are made to press this cylinder on all sides, and as it were squeeze it between them: and thus the particles at the hole must of necessity be accelerated, and the velocity of the jet must be greater than that of the stream. We are disposed to think that, in a fluid perfectly incompressible, the velocity will be doubled, or at least increased in the proportion of 1 to $\sqrt{2}$. If the fluid is in the smallest degree compressible, even in the very small degree that water is, the velocity at the first impulse may be much greater. D. Bernoulli found that a column of water moving 5 feet per second, in a tube some hundred feet long, produced a velocity of 136 feet per second in the first moment.

There being this radical defect in the theory of Mr Euler, it is needless to take notice of its total insufficiency for explaining oblique impulses and the resistance of curvilinear prow.

59
Ingenious
solution of
d'Alembert.

We are extremely sorry that our readers are deriving so little advantage from all that we have said; and that having taken them by the hand, we are thus obliged to grope about, with only a few scattered rays of light to direct our steps. Let us see what assistance we can get from Mr d'Alembert, who has attempted a solution of this problem in a method entirely new and extremely ingenious. He saw clearly that all the followers of Newton had forsaken the path which he had marked out for them in the second part of his investigation, and had merely amused themselves with the mathematical discussions with which his introductory hypothesis gave them an opportunity of occupying themselves. He paid the deserved tribute of applause to Daniel Bernoulli for having introduced the notion of pure pressure as the chief agent in this business; and he saw that he was in the right road, and that it was from hydrostatical principles alone that we had any chance of explaining the phenomena of hydraulics. Bernoulli had only considered the pressures which were excited in consequence of the curvilinear motions of the particles. Mr d'Alembert even thought that these pressures were not the consequences, but the causes, of these curvilinear motions. No internal motion can happen in a fluid but in consequence of an unbalanced pressure; and every

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such motion will produce an inequality of pressure, which will determine the succeeding motions. He therefore endeavoured to reduce all to the discovery of those disturbing pressures, and thus to the laws of hydrostatics. He had long before this hit on a very refined and ingenious view of the action of bodies on each other, which had enabled him to solve many of the most difficult problems concerning the motions of bodies, such as the centre of oscillation, of spontaneous conversion, the precession of the equinoxes, &c. &c. with great facility and elegance. He saw that the same principle would apply to the action of fluid bodies. The principle is this.

"In whatever manner any number of bodies are supposed to act on each other, and by these actions come to change their present motions, if we conceive that the motion which each body would have in the following instant (if it became free), is resolved into two other motions; one of which is the motion which it really takes in the following instant; the other will be such, that if each body had no other motion but this second, the whole bodies would have remained in equilibrio." We here observe, that "the motion which each body would have in the following instant, if it became free," is a continuation of the motion which it has in the first instant. It may therefore perhaps be better expressed thus:

If the motions of bodies, anyhow acting on each other, be considered in two consecutive instants, and if we conceive the motion which it has in the first instant as compounded of two others, one of which is the motion which it actually takes in the second instant, the other is such, that if each body had only those second motions, the whole system would have remained in equilibrio.

The proposition itself is evident. For if these second motions be not such as that an equilibrium of the whole system would result from them, the other component motions would not be those which the bodies really have after the change; for they would necessarily be altered by these unbalanced motions. See D'Alembert *Essai de Dynamique*.

Assisted by this incontestable principle, Mr d'Alembert demonstrates, in a manner equally new and simple, those propositions which Newton had so cautiously deduced from his hypothetical fluid, showing that they were not limited to this hypothesis, viz. that the motions produced by similar bodies, similarly projected in them, would be similar; that whatever were the pressures, the curves described by the particles would be the same; and that the resistances would be proportional to the squares of the velocities. He then comes to consider the fluid as having its motions constrained by the form of the canal or by solid obstacles interposed.

We shall here give a summary account of his fundamental proposition.

It is evident, that if the body ADCE (fig. 16.) did not form an obstruction to the motion of the water, the particles would describe parallel lines TF, OK, PS, &c. But while yet at a distance from the body in F, K, S, they gradually change their directions, and describe the curves FM, Km, Sn, so much more incurvated as they are nearer to the body. At a certain distance ZY this curvature will be insensible, and the fluid included in the space ZYHQ will move uniformly as if the solid body were not there. The motions on the other side of the axis AC will be the same; and we need only

P

attend

Resistance.

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Summary
account of
his funda-
mental pro-
position.
Plate
ccccxxv.

Resistance. attend to one half, and we shall consider these as in a state of permanency.

No body changes either its direction or velocity otherwise than by insensible degrees: therefore the particle which is moving in the axis will not reach the vertex *A* of the body, where it behoved to deflect instantaneously at right angles. It will therefore begin to be deflected at some point *F* a-head of the body, and will describe a curve *FM*, touching the axis in *F*, and the body in *M*; and then, gliding along the body, will quit it at some point *L*, describing a tangent curve, which will join the axis again (touching it) in *R*; and thus there will be a quantity of stagnant water *FAM* before or a-head of the body, and another *LCR* behind or astern of it.

Let *a* be the velocity of a particle of the fluid in any instant, and *a'* its velocity in the next instant. The velocity *a* may be considered as compounded of *a'* and *a''*. If the particles tended to move with the velocities *a''* only, the whole fluid would be in equilibrio (general principle), and the pressure of the fluid would be the same as if all were stagnant, and each particle were

urged by a force $\frac{a''}{t}$, *t* expressing an indefinitely small

moment of time. (*N. B.* $\frac{a''}{t}$ is the proper expression of

the accelerating force, which, by acting during the moment *t*, would generate the velocity *a''*; and *a''* is supposed an indeterminate quantity, different perhaps for each particle). Now let *a* be supposed constant, or *a* = *a'*. In this case *a''* = 0. That is to say, no pressure whatever will be exerted on the solid body unless there happen changes in the velocities or directions of the particles.

Let *a* and *a'* then be the motions of the particles in two consecutive instants. They would be in equilibrio if urged only by the forces $\frac{a''}{t}$. Therefore if *γ* be the point where the particles which describe the curve *FM* begin to change their velocity, the pressure in *D* would be equal to the pressure which the fluid contained in the canal *γ FMD* would exert, if each particle were solicited by its force $\frac{a''}{t}$. The question is therefore reduced to the finding the curvature in the canal *γ FMD*, and the accelerating forces $\frac{a''}{t}$ in its different parts.

It appears, in the first place, that no pressure is exerted by any of the particles along the curve *FM*: for suppose that the particle *a* (fig. 17.) describes the indefinitely small straight line *ab* in the first instant, and *bc* in the second instant; produce *ab* till *bd* = *ab*, and joining *dc*, the motion *ab* or *bd* may be considered as composed of *bc*, which the particle really takes in the next instant, and a motion *dc* which should be destroyed. Draw *bi* parallel to *dc*, and *ie* perpendicular to *bc*. It is plain that the particle *b*, solicited by the forces *be*, *ei* (equivalent to *dc*) should be in equilibrio. This being established, *be* must be = 0, that is, there will be no accelerating or retarding force at *b*; for if there be, draw *bm* (fig. 18.) perpendicular to *bF*, and the parallel *nq* infinitely near it. The part *bn* of the fluid contained in the canal *bnqm* would sustain some pres-

sure from *b* towards *n*, or from *n* towards *b*. Therefore since the fluid in this stagnant canal should be in equilibrio, there must also be some action, at least in one of the parts *bm*, *mq*, *qn*, to counterbalance the action on the part *bn*. But the fluid is stagnant in the space *FAM* (in consequence of the law of continuity). Therefore there is no force which can act on *bm*, *mq*, *qn*; and the pressure in the canal in the direction *bn* or *nb* is nothing, or the force *be* = 0, and the force *ie* is perpendicular to the canal; and there is therefore no pressure in the canal *FM*, except what proceeds from the part *γ F*, or from the force *ei*; which last being perpendicular to the canal, there can be no force exerted on the point *M*, but what is propagated from the part *γ F*.

The velocity therefore in the canal *FM* is constant if finite, or infinitely small if variable: for, in the first case, the force *be* would be absolutely nothing; and in the second case, it would be an infinitesimal of the second order, and may be considered as nothing in comparison with the velocity, which is of the first order. We shall see by and by that the last is the real state of the case. Therefore the fluid, before it begins to change its direction in *F*, begins to change its velocity in some point *γ* a-head of *F*, and by the time that it reaches *F* its velocity is as it were annihilated.

Cor. 1. Therefore the pressure in any point *D* arises both from the retardations in the part *γ F*, and from the particles which are in the canal *MD*: as these last

move along the surface of the body, the force $\frac{a''}{t}$, de-

stroyed in every particle, is compounded of two others, one in the direction of the surface, and the other perpendicular to it; call these *p* and *p'*. The point *D* is pressed perpendicularly to the surface *MD*; 1st, by all the forces *p* in the curve *MD*; 2^d, by the force *p'* acting on the single point *D*. This may be neglected in comparison of the indefinite number of the others: therefore taking in the arch *MD*, an infinitely small

portion *Nm*, = *s*, the pressure on *D*, perpendicular to the surface of the body, will be = $\int p's$; and this fluent must be so taken as to be = 0 in the point *M*.

Cor. 2. Therefore, to find the pressure on *D*, we must find the force *p* on any point *N*. Let *u* be the velocity of the particle *N*, in the direction *Nm* in any instant, and *u + u'* its velocity in the following instant;

we must have $p = \frac{-u'}{t}$. Therefore the whole question

is reduced to finding the velocity *u* in every point *N*, in the direction *Nm*.

And this is the aim of a series of propositions which follow, in which the author displays the most accurate and precise conception of the subject, and great address and elegance in his mathematical analysis. He at length brings out an equation which expresses the pressure on the body in the most general and unexceptionable manner. We cannot give an abstract, because the train of reasoning is already concise in the extreme: nor can we even exhibit the final equation; for it is conceived in the most refined and abstruse form of indeterminate functions, in order to embrace every possible circumstance. But we can assure our readers, that it truly expresses the solution of the problem. But, alas! it is of

Resistance. no use. So imperfect is our mathematical knowledge, that even Mr d'Alembert has not been able to exemplify the application of the equation to the simplest case which can be proposed, such as the direct impulse on a plane surface wholly immersed in the fluid. All that he is enabled to do, is to apply it (by some modifications and substitutions which take it out of its state of extreme generality) to the direct impulse of a vein of fluid on a plane which deflects it wholly, and thus to show its conformity to the solution given by Daniel Bernoulli, and to observation and experience. He shows, that this impulse (independent of the deficiency arising from the plane's not being of infinite extent) is somewhat less than the weight of a column whose base is the section of the vein, and whose height is twice the fall necessary for communicating the velocity. This great philosopher and geometer concludes by saying, that he does not believe that any method can be found for solving this problem that is more direct and simple; and imagines, that if the deductions from it shall be found not to agree with experiment, we must give up all hopes of determining the resistance of fluids by theory and analytical calculus. He says *analytical calculus*; for all the physical principles on which the calculus proceeds are rigorously demonstrated, and will not admit of a doubt. There is only one hypothesis introduced in his investigation, and this is not a physical hypothesis, but a hypothesis of calculation. It is, that the quantities which determine the ratios of the second fluxions of the velocities, estimated in the directions parallel and perpendicular to the axis AC (fig. 16.) are functions of the abscissa AP, and ordinate PM of the curve. Any person, in the least acquainted with mathematical analysis, will see, that without this supposition no analysis or calculus whatever can be instituted. But let us see what is the *physical* meaning of this hypothesis. It is simply this, that the motion of the particle M depends on its situation only. It appears impossible to form any other opinion; and if we could form such an opinion, it is as clear as day-light that the case is desperate, and that we must renounce all hopes.

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Mathematicians should apply to simple cases;

We are sorry to bring our labours to this conclusion; but we are of opinion, that the only thing that remains is, for mathematicians to attach themselves with firmness and vigour to some simple cases; and, without aiming at generality, to apply Mr d'Alembert's or Bernoulli's mode of procedure to the particular circumstances of the case. It is not improbable but that, in the solutions which may be obtained of these particular cases, circumstances may occur which are of a more general nature. These will be so many laws of hydraulics to be added to our present very scanty stock; and these may have points of resemblance, which will give birth to laws of still greater generality. And we repeat our expression of hopes of some success, by endeavouring to determine, in some simple cases, the *minimum possible* of motion. The attempts of the Jesuit commentators on the *Principia* to ascertain this on the Newtonian hypothesis do them honour, and have really given us great assistance in the particular case which came through their hands.

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And multiply experiments.

And we should multiply experiments on the resistance of bodies. Those of the French academy are undoubtedly of inestimable value, and will always be ap-

pealed to. But there are circumstances in those experiments which render them more complicated than is proper for a general theory, and which therefore limit the conclusions which we wish to draw from them. The bodies were floating on the surface. This greatly modifies the deflections of the filaments of water, causing some to deflect laterally, which would otherwise have remained in one vertical plane; and this circumstance also necessarily produced what the academicians called the *remou*, or accumulation on the anterior part of the body, and depression behind it. This produced an additional resistance, which was measured with great difficulty and uncertainty. The effect of adhesion must also have been very considerable, and very different in the different cases; and it is of difficult calculation. It cannot perhaps be totally removed in any experiment, and it is necessary to consider it as making part of the resistance in the most important practical cases, viz. the motion of ships. Here we see that its effect is very great. Every seaman knows that the speed, even of a copper-sheathed ship, is *greatly* increased by greasing her bottom. The difference is too remarkable to admit of a doubt: nor should we be surprised at this, when we attend to the diminution of the motion of water in long pipes. A smooth pipe four and an half inches diameter, and 500 yards long, yields but one-fifth of the quantity which it ought to do independent of friction. But adhesion does a great deal which cannot be compared with friction. We see that water flowing thro' a hole in a thin plate will be increased in quantity fully one-third, by adding a little tube whose length is about twice the diameter of the hole. The adhesion therefore will greatly modify the action of the filaments both on the solid body and on each other, and will change both the forms of the curves and the velocities in different points; and this is a sort of objection to the only hypothesis introduced by d'Alembert. Yet it is only a sort of objection; for the effect of this adhesion, too, must undoubtedly depend on the situation of the particle.

The form of these experiments of the academy is ill-suited to the examination of the resistance of bodies wholly immersed in the fluid. The form of experiment adopted by Robins for the resistance of air, and afterwards by the Chevalier Borda for water, is free from these inconveniences, and is susceptible of equal accuracy. The great advantage of both is the exact knowledge which they give us of the velocity of the motion; a circumstance essentially necessary, and but imperfectly known in the experiments of Mariotte and others, who examined quiescent bodies exposed to the action of a stream. It is extremely difficult to measure the velocity of a stream. It is very different in its different parts. It is swiftest of all in the middle superficial filament, and diminishes as we recede from this towards the sides or bottom, and the rate of diminution is not precisely known. Could this be ascertained with the necessary precision, we should recommend the following form of experiment as the most simple, easy, economical, and accurate.

Let *a, b, c, d*, (fig. 19.) be four hooks placed in a horizontal plane at the corners of a rectangular parallelogram, the sides *ac, bd* being parallel to the direction of the stream ABCD, and the sides *ab, cd* being perpendicular to it. Let the body G be fastened to

Resistance.

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ccccxxvi.

66
Simple experiment for measuring the velocity of a stream.

Resistance an axis ef of stiff-tempered steel-wire, so that the surface on which the fluid is to act may be inclined to the stream in the precise angle we desire. Let this axis have hooks at its extremities, which are hitched into the loops of four equal threads, suspended from the hooks a, b, c, d ; and let He be a fifth thread, suspended from the middle of the line joining the points of suspension a, b . Let HIK be a graduated arch, whose centre is H , and whose plane is in the direction of the stream. It is evident that the impulse on the body G will be measured (by a process well known to every mathematician) by the deviation of the thread He from the vertical line HI ; and this will be done without any intricacy of calculation, or any attention to the centres of gravity, of oscillation, or of percussion. These must be accurately ascertained with respect to that form in which the pendulum has always been employed for measuring the impulse or velocity of a stream. These advantages arise from the circumstance, that the axis ef remains always parallel to the horizon. We may be allowed to observe, by the by, that this would have been a great improvement of the beautiful experiments of Mr Robins and Dr Hutton on the velocities of cannon-shot, and would have saved much intricate calculation, and been attended with many important advantages.

The great difficulty is, as we have observed, to measure the velocity of the stream. Even this may be done in this way with some precision. Let two floating bodies be dragged along the surface, as in the experiments of the academy, at some distance from each other laterally, so that the water between them may not be sensibly disturbed. Let a horizontal bar be attached to them, transverse to the direction of their motion, at a proper height above the surface, and let a spherical pendulum be suspended from this, or let it be suspended from four points, as here described. Now let the deviation of this pendulum be noted in a variety of velocities. This will give us the law of relation between the velocity and the deviation of the pendulum. Now, in making experiments on the resistance of bodies, let the velocity of the stream, in the very filament in which the resistance is measured, be determined by the deviation of this pendulum.

It were greatly to be wished that some more palpable argument could be found for the existence of a quantity of stagnant fluid at the anterior and posterior parts of the body. The one already given, derived from the consideration that no motion changes either its velocity or direction by finite quantities in an instant, is unexceptionable. But it gives us little information. The smallest conceivable extent of the curve FM in fig. 16. will answer this condition, provided only that it touches the axis in some point F , and the body in some point M , so as not to make a finite angle with either. But surely there are circumstances which rigorously determine the extent of this stagnant fluid. And it appears without doubt, that if there were no cohesion or friction, this space will have a determined ratio to the size of the body (the figures of the bodies being supposed similar). Suppose a plane surface AB , as in fig. 10. there can be no doubt but that the figure $AaD\delta B$ will in every case be similar. But if we suppose an adhesion or tenacity which is constant, this may make a change both in its extent and its form: for its con-

stancy of form depends on the disturbing forces being always as the squares of the velocity; and this ratio of the disturbing forces is preserved, while the inertia of the fluid is the only agent and patient in the process. But when we add to this the constant (that is, invariable) disturbing force of tenacity, a change of form and dimensions must happen. In like manner, the friction, or something analogous to friction, which produces an effect proportional to the velocity, must alter this necessary ratio of the whole disturbing forces. We may conclude, that the effect of both these circumstances will be to diminish the quantity of this stagnant fluid, by licking it away externally; and to this we must ascribe the fact, that the part FAM is never perfectly stagnant, but is generally disturbed with a whirling motion. We may also conclude, that this stagnant fluid will be more incurvated between F and M than it would have been, independent of tenacity and friction; and that the arch LR will, on the contrary, be less incurvated.—And, lastly, we may conclude, that there will be something opposite to pressure, or something which we may call *abstraction*, exerted on the posterior part of the body which moves in a tenacious fluid, or is exposed to the stream of such a fluid; for the stagnant fluid LCR adheres to the surface LC ; and the passing fluid tends to draw it away both by its tenacity and by its friction. This must augment the apparent impulse of the stream on such a body; and it must greatly augment the resistance, that is, the motion lost by this body in its progress through the tenacious fluid: for the body must drag along with it this stagnant fluid, and drag it in opposition to the tenacity and friction of the surrounding fluid. The effect of this is most remarkably seen in the resistances to the motion of pendulums; and the chevalier Buat, in his examination of Newton's experiments, clearly shows that this constitutes the greatest part of the resistance.

This most ingenious writer has paid great attention to this part of the process of nature, and has laid the foundation of a theory of resistance entirely different from all the preceding. We cannot abridge it; and it is too imperfect in its present condition to be offered as a body of doctrine: but we hope that the ingenious author will prosecute the subject.

We cannot conclude this dissertation (which we acknowledge to be very unsatisfactory and imperfect) better, than by giving an account of some experiments of the chevalier Buat, which seem of immense consequence, and tend to give us very new views of the subject. Mr Buat observed the motion of water issuing from a glass cylinder through a narrow ring formed by a bottom of smaller diameter; that is, the cylinder was open at both ends, and there was placed at its lower end a circle of smaller diameter, by way of bottom, which left a ring all around. He threw some powdered sealing wax into the water, and observed with great attention the motion of its small particles. He saw those which happened to be in the very axis of the cylinder descend along the axis with a motion pretty uniform, till they came very near the bottom; from this they continued to descend very slowly, till they were almost in contact with the bottom; they then deviated from the centre, and approached the orifice in a straight

Resistance. straight lines and with an accelerated motion, and at last darted into the orifice with great rapidity. He had observed a thing similar to this in a horizontal canal, in which he had set up a small board like a dam or bar, over which the water flowed. He had thrown a gooseberry into the water, in order to measure the velocity at the bottom, the gooseberry being a small matter heavier than water. It approached the dam uniformly till about three inches from it. Here it almost stood still, but it continued to advance till almost in contact. It then rose from the bottom along the inside of the dam with an accelerated motion, and quickly escaped over the top.

Hence he concluded, that the water which covers the anterior part of the body exposed to the stream is not perfectly stagnant, and that the filaments recede from the axis in curves, which converge to the surface of the body as different hyperbolas converge to the same asymptote, and that they move with a velocity continually increasing till they escape round the sides of the body.

He had established (by a pretty reasonable theory, confirmed by experiment) a proposition concerning the pressure which water in motion exerts on the surface along which it glides, viz. *that the pressure is equal to that which it would exert if at rest minus the weight of the column whose height would produce the velocity of the passing stream.* Consequently the pressure which the stream exerts on the surface perpendicularly exposed to it will depend on the velocity with which it glides along it, and will diminish from the centre to the circumference. This, says he, may be the reason why the impulse on a plane wholly immersed is but one half of that on a plane which deflects the whole stream.

68 And of the instrument he contrived for examining his theory. He contrived a very ingenious instrument for examining this theory. A square brass plate ABGF (fig. 20.) was pierced with a great number of holes, and fixed in the front of a shallow box represented edgewise in fig. 21. The back of this box was pierced with a hole *c*, in which was inserted the tube of glass CDE, bent square at D. This instrument was exposed to a stream of water, which beat on the brass plate. The water having filled the box through the holes, stood at an equal height in the glass tube when the surrounding water was stagnant; but when it was in motion, it always stood in the tube above the level of the smooth water without, and thus indicated the pressure occasioned by the action of the stream.

When the instrument was not wholly immersed, there was always a considerable accumulation against the front of the box, and a depression behind it. The water before it was by no means stagnant: indeed it should not be, as Mr Buat observes; for it consists of the water which was escaping on all sides, and therefore upwards from the axis of the stream, which meets the plate perpendicularly in *c* considerably under the surface. It escapes upwards; and if the body were sufficiently immersed, it would escape in this direction almost as easily as laterally. But in the present circumstances, it heaps up, till the elevation occasions it to fall off sideways as fast as it is renewed. When the instrument was immersed more than its semidiameter under the surface, the water still rose above the level, and there was a great depression immediately behind this elevation. In consequence of this difficulty of escaping upwards, the wa-

ter flows off laterally; and if the horizontal dimensions of the surface is great, this lateral efflux becomes more difficult, and requires a greater accumulation. From this it happens, that the resistance of broad surfaces equally immersed is greater than in the proportion of the breadth. A plane of two feet wide and one foot deep, when it is not completely immersed, will be more resisted than a plane two feet deep and one foot wide; for there will be an accumulation against both: and even if these were equal in height, the additional surface will be greatest in the widest body; and the elevation will be greater, because the lateral escape is more difficult.

The circumstances chiefly to be attended to are these.

The pressure on the centre was much greater than towards the border, and, in general, the height of the water in the tube DE was more than $\frac{4}{5}$ of the height necessary for producing the velocity when only the central hole was open. When various holes were opened at different distances from the centre, the height of the water in DH continually diminished as the hole was nearer the border. At a certain distance from the border the water at E was level with the surrounding water, so that no pressure was exerted on that hole. But the most unexpected and remarkable circumstance was, that, in great velocities, the holes at the very border, and even to a small distance from it, not only sustained no pressure, but even gave out water; for the water in the tube was lower than the surrounding water. Mr Buat calls this a *non-pressure*. In a case in which the velocity of the stream was three feet, and the pressure on the central hole caused the water in the vertical tube to stand 33 lines or $\frac{3}{4}$ of an inch above the level of the surrounding smooth water, the action on a hole at the lower corner of the square caused it to stand 12 lines lower than the surrounding water. Now the velocity of the stream in this experiment was 36 inches per second. This requires $21\frac{1}{2}$ lines for its productive fall; whereas the pressure on the central hole was 33. This approaches to the pressure on a surface which deflects it wholly. The intermediate holes gave every variation of pressure, and the diminution was more rapid as the holes were nearer the edge; but the law of diminution could not be observed.

This is quite a new and most unexpected circumstance in the action of fluids on solid bodies, and renders the subject more intricate than ever; yet it is by no means inconsistent with the genuine principles of hydrostatics or hydraulics. In as far as Mr Buat's proposition concerning the pressure of moving fluids is true, it is very reasonable to say, that when the lateral velocity with which the fluid tends to escape exceeds the velocity of percussion, the height necessary for producing this velocity must exceed that which would produce the other, and a non-pressure must be observed. And if we consider the forms of the lateral filaments near the edge of the body, we see that the concavity of the curve is turned towards the body, and that the centrifugal forces tend to diminish their pressure on the body. If the middle alone were struck with a considerable velocity, the water might even rebound, as is frequently observed. This actual rebounding is here prevented by the surrounding water, which is moving with the same velocity: but the

69 Circumstances chiefly to be attended to in using this instrument.

70 Remarkable circumstance.

71 Not inconsistent with the principles of hydrostatics or hydraulics.

Resistance. the pressure may be almost annihilated by the tendency to rebound of the inner filaments.

72
Substance
of Buat's
theory.

Part (and perhaps a considerable part) of this apparent non-pressure is undoubtedly produced by the tenacity of the water, which licks off with it the water lying in the hole. But, at any rate, this is an important fact, and gives great value to these experiments. It gives a key to many curious phenomena in the resistance of fluids; and the theory of Mr Buat deserves a very serious consideration. It is all contained in the two following propositions.

1. "If, by any cause whatever, a column of fluid, whether making part of an indefinite fluid, or contained in solid canals, comes to move with a given velocity, the pressure which it exerted laterally before its motion, either on the adjoining fluid or on the sides of the canal, is diminished by the weight of a column having the height necessary for communicating the velocity of the motion.

2. "The pressure on the centre of a plane surface perpendicular to the stream, and wholly immersed in it, is $\frac{1}{2}$ of the weight of a column having the height necessary for communicating the velocity. For 33 is $\frac{1}{2}$ of 21 $\frac{1}{2}$."

73
Experiments by
which it is
confirmed.

He attempted to ascertain the medium pressure on the whole surface, by opening 625 holes dispersed all over it. With the same velocity of current, he found the height in the tube to be 29 lines, or $7\frac{1}{4}$ more than the height necessary for producing the velocity. But he justly concluded this to be too great a measure, because the holes were $\frac{1}{4}$ of an inch from the edge: had there been holes at the very edge, they would have sustained a non-pressure, which would have diminished the height in the tube very considerably. He exposed to the same stream a conical funnel, which raised the water to 34 lines. But this could not be considered as a measure of the pressure on a plane solid surface; for the central water was undoubtedly scooped out, as it were, and the filaments much more deflected than they would have been by a plane surface. Perhaps something of this happened even in every small hole in the former experiments. And this suggests some doubt as to the accuracy of the measurement of the pressure and of the velocity of a current by Mr Pitot's tube. It surely renders some corrections absolutely necessary. It is a fact, that when exposed to a vein of fluid coming through a short passage, the water in the tube stands on a level with that in the reservoir. Now we know that the velocity of this stream does not exceed what would be produced by a fall equal to $\frac{8^2}{100}$ of the head of water in the reservoir. Mr Buat made many valuable observations and improvements on this most useful instrument, which will be taken notice of in the articles RIVERS and WATER-Works.

Mr Buat, by a scrupulous attention to all the circumstances, concludes, that the medium of pressure on the whole surface is equal to $\frac{25,5}{21,5}$ of the weight of a column, having the surface for its base, and the productive fall for its height. But we think that there is an uncertainty in this conclusion; because the height of the water in the vertical tube was undoubtedly augmented by an hydrostatical pressure arising from the accumulation of water above the body which was exposed to the stream.

Since the pressures are as the squares of the veloci-

ties, or as the heights h which produce the velocities, Resistance.

we may express this pressure by the symbol $\frac{25,5}{21,5}b$, or $1,186b$, or mb , the value of m being 1,186. This exceeds considerably the result of the experiments of the French academy. In these it does not appear that m sensibly exceeds unity. Note, that in these experiments the body was moved through still water; here it is exposed to a stream. These are generally supposed to be equivalent, on the authority of the third law of motion, which makes every action depend on the relative motions. We shall by and by see some causes of difference.

The writers on this subject seem to think their task completed when they have considered the action of the fluid on the anterior part of the body, or that part of it which is before the broadest section, and have paid little or no attention to the hinder part. Yet those who are most interested in the subject, the naval architects, seem convinced that it is of no less importance to attend to the form of the hinder part of a ship. And the universal practice of all nations has been to make the hinder part more acute than the fore-part. This has undoubtedly been deduced from experience; for it is in direct opposition to any notions which a person would naturally form on this subject. Mr Buat therefore thought it very necessary to examine the action of the water on the hinder part of a body by the same method. And, previous to this examination, in order to acquire some scientific notions of the subject, he made the following very curious and instructive experiment.

Two little conical pipes AB (fig. 22.) were inserted into the upright side of a prismatic vessel. They were an inch long, and their diameters at the inner and outer ends were five and four lines. A was 57 lines under the surface, and B was 73. A glass syphon was made of the shape represented in the figure, and its internal diameter was $1\frac{1}{4}$ lines. It was placed with its mouth in the axis, and even with the base of the conical pipe. The pipes being shut, the vessel was filled with water, and it was made to stand on a level in the two legs of the syphon, the upper part being full of air. When this syphon was applied to the pipe A, and the water running freely, it rose 32 lines in the short leg, and sunk as much in the other. When it was applied to the pipe B, the water rose 41 lines in the one leg of the syphon, and sunk as much in the other.

He reasons in this manner from the experiment. The ring comprehended between the end of the syphon and the sides of the conical tube being the narrowest part of the orifice, the water issued with the velocity corresponding to the height of the water in the vessel above the orifice, diminished for the contraction. If therefore the cylinder of water immediately before the mouth of the syphon issued with the same velocity, the tube would be emptied through a height equal to this HEAD OF WATER (charge). If, on the contrary, this cylinder of water, immediately before the mouth of the syphon, were stagnant, the water in it would exert its full pressure on the mouth of the syphon, and the water in the syphon would be level with the water in the vessel. Between these extremes we must find the real state of the case, and we must measure the force of non-pressure by the rise of the water in the syphon.

We see that in both experiments it bears an accurate proportion.

74
The action
on the hinder
part of
a body or
ship equal
to that on the
fore-part.

75
Experiment on
this subject
by Buat,
Plate
CCCCXXVI.

76
And his
reasoning
upon it,

Resistance. proportion to the depth under the surface. For 57: 73 = 32: 41 very nearly. He therefore estimates the non-pressure to be $\frac{56}{100}$ of the height of the water above the orifice.

⁷⁷ **Seemingly inaccurate.** We are disposed to think that the ingenious author has not reasoned accurately from the experiment. In the first place, the force indicated by the experiment, whatever be its origin, is certainly double of what he supposes; for it must be measured by the sum of the rise of the water in one leg, and its depression in the other, the weight of the air in the bend of the syphon being neglected. It is precisely analogous to the force acting on the water oscillating in a syphon, which is acknowledged to be the sum of the elevation and depression. The force indicated by the experiment therefore is $\frac{112}{100}$ of the height of the water above the orifice. The force exhibited in this experiment bears a still greater proportion to the productive height; for it is certain that the water *did not* issue with the velocity acquired by the fall from the surface, and probably did not exceed $\frac{2}{3}$ of it. The effect of contraction must have been considerable and uncertain. The velocity should have been measured both by the amplitude of the jet and by the quantity of water discharged. In the next place, we apprehend that much of the effect is produced by the tenacity of the water, which drags along with it the water which would have slowly issued from the syphon, had the other end not dipped into the water of the vessel. We know, that if the horizontal part of the syphon had been continued far enough, and if no retardation were occasioned by friction, the column of water in the upright leg would have accelerated like any heavy body; and when the last of it had arrived at the bottom of that leg, the whole in the horizontal part would be moving with the velocity acquired by falling from the surface. The water of the vessel which issues through the surrounding ring very quickly acquires a much greater velocity than what the water descending in the syphon would acquire in the same time, and it drags this last water along with it both by tenacity and friction, and it drags it out till its action is opposed by the want of equilibrium produced in the syphon, by the elevation in the one leg and the depression in the other. We imagine that little can be concluded from the experiment with respect to the real non-pressure. Nay, if the sides of the syphon be supposed infinitely thin, so that there would be no curvature of the filaments of the surrounding water at the mouth of the syphon, we do not very distinctly see any source of non-pressure: For we are not altogether satisfied with the proof which Mr Buat offers for this measure of the pressure of a stream of fluid gliding along a surface, *and obstructed by friction or any other cause.* We imagine that the passing water in the present experiment would be a little retarded by accelerating continually the water descending in the syphon, and renewed a-top, supposing the upper end open; because this water would not of itself acquire more than half this velocity. It however drags it out, till it not only resists with a force equal to the weight of the whole vertical column, but even exceeds it by $\frac{12}{100}$. This it is able to do, because the whole pressure by which the water issues from an orifice has been shown (by Daniel Bernoulli) to be equal to twice this weight. We therefore consider this beautiful experiment as chiefly valuable, by giving us a mea-

sure of the tenacity of the water; and we wish that it were repeated in a variety of depths, in order to discover what relation the force exerted bears to the depth. It would seem that the tenacity, being a certain determinate thing, the proportion of 100 to 112 would not be constant; and that the observed ratio would be made up of two parts, one of them constant, and the other proportional to the depth under the surface.

But still this experiment is intimately connected with the matter in hand; and this apparent non-pressure on the hinder part of a body exposed to a stream, from whatever causes it proceeds, does operate in the action of water on this hinder part, and must be taken into the account.

We must therefore follow the Chevalier de Buat in his discussions on this subject. A prismatic body, having its prow and poop equal and parallel surfaces, and plunged horizontally into a fluid, will require a force to keep it firm in the direction of its axis precisely equal to the difference between the real pressures exerted on its prow and poop. If the fluid is at rest, this difference will be nothing, because the opposite dead pressures of the fluid will be equal: but in a stream, there is superadded to the dead pressure on the prow the active pressure arising from the deflections of the filaments of this fluid. ⁷⁸ Further discussions of De Buat.

If the dead pressure on the poop remained in its full intensity by the perfect stagnation of the water behind it, the whole sensible pressure on the body would be the active pressure only on the prow, represented by mb . If, on the other hand, we could suppose that the water behind the body moved continually away from it (being renewed laterally) with the velocity of the stream, the dead pressure would be entirely removed from its poop, and the whole sensible pressure, or what must be opposed by some external force, would be $mb + b$. Neither of these can happen; and the real state of the case must be between these extremes.

The following experiments were tried: The perforated box with its vertical tube was exposed to the stream, the brass plate being turned down the stream. The velocity was again 36 inches per second. ⁷⁹ Experiments.

The central hole A alone being opened, gave a non-pressure of	-	-	13 lines.
A hole B, $\frac{5}{8}$ of an inch from the edge,	-	-	15
gave	-	-	15,7
A hole C, near the surface	-	-	15,3
A hole D, at the lower angle	-	-	15,3

Here it appears that there is a very considerable non-pressure, increasing from the centre to the border. This increase undoubtedly proceeds from the greater lateral velocity with which the water is gliding in from the sides. The water behind was by no means stagnant, although moving off with a much smaller velocity than that of the passing stream, and it was visibly removed from the sides, and gradually licked away at its further extremity.

Another box, having a great number of holes, all open, indicated a medium of non-pressure equal to $13\frac{5}{8}$ lines.

Another of larger dimensions, but having fewer holes, indicated a non-pressure of $12\frac{1}{8}$.

But the most remarkable, and the most important phenomena, were the following:

The first box was fixed to the side of another box, ⁸⁰

Resistance so that, when all was made smooth, it made a perfect cube, of which the perforated brass plate made the poop.

The apparatus being now exposed to the stream, with the perforated plate looking down the stream,

The hole A indicated a non-pressure	= 7,2
B	8
C	6

Here was a great diminution of the non-pressions produced by the distance between the prow and the poop.

This box was then fitted in the same manner, so as to make the poop of a box three feet long. In this situation the non-pressures were as follow :

Hole A	1,5
B	3,2

The non-pressions were still farther diminished by this increase of length.

The box was then exposed with all the holes open, in three different situations :

1st, Single, giving a non-pressure	13,1
2d, Making the poop of a cube	5,3
3d, Making the poop of a box three feet long	3,0

Another larger box :

1st, Single	12,2
2d, Poop of a cube	5,
3d, Poop of the long box	3,2

80
Great utility of them in ship-building.

These are most valuable experiments. They plainly show how important it is to consider the action on the hinder part of the body. For the whole impulse or resistance, which must be withstood or overcome by the external force, is the sum of the active pressure on the fore-part, and of the non-pressure on the hinder-part ; and they show that this does not depend solely on the form of the prow and poop, but also, and perhaps chiefly, on the length of the body. We see that the non-pressure on the hinder-part was prodigiously diminished (reduced to one-fourth) by making the length of the body triple of the breadth. And hence it appears, that merely lengthening a ship, without making any change in the form either of her prow or her poop, will greatly diminish the resistance to her motion through the water ; and this increase of length may be made by continuing the form of the midship frame in several timbers along the keel, by which the capacity of the ship, and her power of carrying sail, will be greatly increased, and her other qualities improved, while her speed is augmented.

81
Physical cause of it explained.

It is surely of importance to consider a little the physical cause of this change. The motions are extremely complicated, and we must be contented if we can but perceive a few leading circumstances.

The water is turned aside by the anterior part of the body, and the velocity of the filaments is increased, and they acquire a divergent motion, by which they also push aside the surrounding water. On each side of the body, therefore, they are moving in a divergent direction, and with an increased velocity. But as they are on all sides pressed by the fluid without them, their motions gradually approach to parallelism, and their velocities to an equality with the stream. The progressive velocity, or that in the direction of the stream, is checked, at least at first. But since we observe the filaments constricted round the body, and that they are not deflected at right angles to their former direction,

it is plain that the real velocity of a filament in its oblique path is augmented. We always observe, that a stone lying in the sand, and exposed to the wash of the sea, is laid bare at the bottom, and the sand is generally washed away to some distance all round. This is owing to the increased velocity of the water which comes into contact with the stone. It takes up more sand than it can keep floating, and it deposits it at a little distance all around, forming a little bank, which surrounds the stone at a small distance. When the filaments of water have passed the body, they are pressed by the ambient fluid into the place which it has quitted, and they glide round its stern, and fill up the space behind. The more divergent and the more rapid they are, when about to fall in behind, the more of the circumambient pressure must be employed to turn them into the trough behind the body, and less of it will remain to press them to the body itself. The extreme of this must obtain when the stream is obstructed by a thin plane only. But when there is some distance between the prow and the poop, the divergency of the filaments which had been turned aside by the prow, is diminished by the time that they have come abreast of the stern, and should turn in behind it. They are therefore more readily made to converge behind the body, and a more considerable part of the surrounding pressure remains unexpended, and therefore presses the water against the stern ; and it is evident that this advantage must be so much the greater as the body is longer. But the advantage will soon be susceptible of no very considerable increase : for the lateral and divergent, and accelerated filaments, will soon become so nearly parallel and equally rapid with the rest of the stream, that a great increase of length will not make any considerable change in these particulars ; and it must be accompanied with an increase of friction.

These are very obvious reflections. And if we attend minutely to the way in which the almost stagnant fluid behind the body is expended and renewed, we shall see all these effects confirmed and augmented. But as we cannot say any thing on this subject that is precise, or that can be made the subject of computation, it is needless to enter into a more minute discussion. The diminution of the non-pressure towards the centre most probably arises from the smaller force which is necessary to be expended in the inflection of the lateral filaments, already inflected in some degree, and having their velocity diminished. But it is a subject highly deserving the attention of the mathematicians ; and we presume to invite them to the study of the motions of these lateral filaments, passing the body, and pressed into its wake by forces which are susceptible of no difficult investigation. It seems highly probable, that if a prismatic box, with a square stern, were fitted with an addition precisely shaped like the water which would (abstracting tenacity and friction) have been stagnant behind it, the quantity of non-pressure would be the smallest possible. The mathematician would surely discover circumstances which would furnish some maxims of construction for the hinder part as well as for the prow. And as his speculations on this last have not been wholly fruitless, we may expect advantages from his attention to this part, so much neglected.

In the mean time, let us attend to the deductions which Mr de Buat has made from his few experiments.

82
Buat's deductions from his experiments.

Resistance.

When the velocity is three feet per second, requiring the productive height 21,5 lines, the heights corresponding to the non-pressure on the poop of a thin plane is 14,41 lines (taking in several circumstances of judicious correction, which we have not mentioned), that of a foot cube is 5,83, and that of a box of triple length is 3,31.

Let q express the variable ratio of these to the height producing the velocity, so that qb may express the non-pressure in every case; we have,

For a thin plane	$q = 0,67$
a cube	$0,271$
a box = 3 cubes	$0,153$

It is evident that the value of q has a dependence on the proportion of the length, and the transverse section of the body. A series of experiments on prismatic bodies showed Mr de Buat that the deviation of the filaments was similar in similar bodies, and that this obtained even in dissimilar prisms, when the lengths were as the square-roots of the transverse sections. Although therefore the experiments were not sufficiently numerous for deducing the precise law, it seemed not impossible to derive from them a very useful approximation. By a dexterous comparison he found, that if l expresses the length of the prism, and s the area of the transverse section, and L expresses the common logarithm of the quantity to which it is prefixed, we shall express the non-pressure pretty accurately by the formula $\frac{1}{q} = L \left(1,42 \frac{l}{\sqrt{s}} \right)$.

Hence arises an important remark, that when the height corresponding to the non-pressure is greater than $\sqrt{s}$, and the body is little immersed in the fluid, there will be a void behind it. Thus a surface of a square inch, just immersed in a current of three feet per second, will have a void behind it. A foot square will be in a similar condition when the velocity is 12 feet.

We must be careful to distinguish this non-pressure from the other causes of resistance, which are always necessarily combined with it. It is superadditive to the active impression on the prow, to the statical pressure of the accumulation a-head of the body, the statical pressure arising from the depression behind it, the effects of friction, and the effects of tenacity. It is indeed next to impossible to estimate them separately, and many of them are actually combined in the measures now given. Nothing can determine the pure non-pressures till we can ascertain the motions of the filaments.

83 He controverts a maxim universally adopted, Mr de Buat here takes occasion to controvert the universally adopted maxim, that the pressure occasioned by a stream of fluid on a fixed body is the same with that on a body moving with equal velocity in a quiescent fluid. He repeated all these experiments with the perforated box in still water. The general distinction was, that both the pressures and the non-pressure in this case was less, and that the odds was chiefly to be observed near the edges of the surface. The general factor of the pressure of a stream on the anterior surface was $m = 1,186$; but that on a body moving through a still fluid is only $m = 1$. He observed no non-pressure even at the very edge of the prow, but even a sensible pressure. The pressure, therefore, or resistance, is more equably diffused over the surface of the prow than the impulse is.—He also found that the resistances diminished in a less ratio than the squares of the velocities, especially in small velocities.

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The non-pressures increased in a greater ratio than the squares of the velocities. The ratio of the velocities to a small velocity of $2\frac{1}{2}$ inches per second increased geometrically, the value of q increased arithmetically; and we may determine q for any velocity V by this proportion

$$L \frac{55}{2,2} : L \frac{V}{22} = 0,5 : q, \text{ and } q = \frac{L \frac{V}{2,2}}{2,8}. \text{ That is,}$$

let the common logarithm of the velocity, divided by $2\frac{1}{2}$, be considered as a common number; divide this common number by $2\frac{8}{10}$, the quotient is q , which must be multiplied by the productive height. The product is the pressure.

When Pitot's tube was exposed to the stream, we had $m = 1$; but when it is carried through still water, m is $= 1,22$. When it was turned from the stream, we had $q = 0,157$; but when carried through still water, q is $= 0,138$. A remarkable experiment.

When the tube was moved laterally through the water, so that the motion was in the direction of the plane of its mouth, the non-pressure was $= 1$. This is one of his chief arguments for his theory of non-pressure. He does not give the detail of the experiment, and only inserts the result in his table.

As a body exposed to a stream deflects the fluid, heaps it up, and increases its velocity; so a body moved through a still fluid turns it aside, causes it to swell up before it, and gives it a real motion alongside of it in the opposite direction. And as the body exposed to a stream has a quantity of fluid almost stagnant both before and behind; so a body moved through a still fluid carries before it and drags after it a quantity of fluid, which accompanies it with nearly an equal velocity. This addition to the quantity of matter in motion must make a diminution of its velocity; and this forms a very considerable part of the observed resistance.

We cannot, however, help remarking that it would require very distinct and strong proof indeed to overturn the common opinion, which is founded on our most certain and simple conceptions of motion, and on a law of nature to which we have never observed an exception. Mr de Buat's experiments, tho' most judiciously contrived, and executed with scrupulous care, are by no means of this kind. They were, of absolute necessity, very complicated; and many circumstances, impossible to avoid or to appreciate, rendered the observation, or at least the comparison, of the velocities, very uncertain.

We can see but two circumstances which do not admit of an easy or immediate comparison in the two states of the problem. When a body is exposed to a stream in our experiments, in order to have an impulse made on it, there is a force tending to move the body backwards, independent of the real impulse or pressure occasioned by the deflection of the stream. We cannot have a stream except in consequence of a sloping surface. Suppose a body floating on this stream. It will not only sail down along with the stream, but it will sail down the stream, and will therefore go faster along the canal than the stream does: for it is floating on an inclined plane; and if we examine it by the laws of hydrostatics, we shall find, that besides its own tendency to slide down this inclined plane, there is an odds of hydrostatical pressure, which pushes it down this plane. It will therefore go along the canal faster than the stream. For this acceleration depends on the difference of pressure at the two ends, and will be more remarkable

84

And supports his opinion by a remarkable experiment.

85

The objection not well founded.

86

Remarks and experiments on the motion of bodies in running or still water.

Q

remarkable

Resistance, markable as the body is larger, and especially as it is longer. This may be distinctly observed. All floating bodies go into the stream of the river, because there they find the smallest obstruction to the acquisition of this motion along the inclined plane; and when a number of bodies are thus floating down the stream, the largest and longest outstrip the rest. A log of wood floating down in this manner may be observed to make its way very fast among the chips and saw-dust which float alongside of it.

Now when, in the course of our experiments, a body is supported against the action of a stream, and the impulse is measured by the force employed to support it, it is plain that part of this force is employed to act against that tendency which the body has to outstrip the stream. This does not appear in our experiment, when we move a body with the velocity of this stream through still water having a horizontal surface.

The other distinguishing circumstance is, that the retardations of a stream arising from friction are found to be nearly as the velocities. When, therefore, a stream moving in a limited canal is checked by a body put in its way, the diminution of velocity occasioned by the friction of the stream having already produced its effect, the impulse is not affected by it; but when the body puts the still water in motion, the friction of the bottom produces some effect, by retarding the recess of the water. This, however, must be next to nothing.

The chief difference will arise from its being almost impossible to make an exact comparison of the velocities: for when a body is moved against the stream, the relative velocity is the same in all the filaments. But when we expose a body to a stream, the velocity of the different filaments is not the same; because it decreases from the middle of the stream to the sides.

87
Mr Buat's
calculation
of resist-
ance,

Mr Buat found the total sensible resistance of a plate 12 inches square, and measured, not by the height of water in the tube of the perforated box, but by weights acting on the arm of a balance, having its centre 15 inches under the surface of a stream moving three feet per second, to be 19,46 pounds; that of a cube of the same dimensions was 15,22; and that of a prism three feet long was 13,87; that of a prism six feet long was 14,27. The three first agree extremely well with the determination of m and q , by the experiments with the perforated box. The total resistance of the last was undoubtedly much increased by friction, and by the retrograde force of so long a prism floating in an inclined stream. This last by computation is 0,223 pounds; this added to $b(m+q)$, which is 13,59, gives 13,81, leaving 0,46 for the effect of friction.

If the same resistances be computed on the supposition that the body moves in still water, in which case we have $m=1$, and q for a thin plate = 0,433; and if q be computed for the lengths of the other two bodies by the formula $\frac{1}{q} = L 1,42 + \frac{l}{\sqrt{s}}$; we shall get for

the resistances 14,94; 12,22; and 11,49.

88
Hence, Mr Buat concludes, that the resistances in And of these two states are nearly in the ratio of 13 to 10. quantity of This, he thinks, will account for the difference observed in the experiments of different authors.

Mr Buat next endeavours to ascertain the quantity of water which is made to adhere in some degree to a water, &c.

body which is carried along thro' still water, or which remains nearly stagnant in the midst of a stream. He takes the sum of the motions in the direction of the stream, viz. the sum of the actual motions of all those particles which have lost part of their motion, and he divides this sum by the general velocity of the stream. The quotient is equivalent to a certain quantity of water perfectly stagnant round the body. Without being able to determine this with precision, he observes, that it augments as the resistance diminishes; for in the case of a longer body, the filaments are observed to converge to a greater distance behind the body. The stagnant mass a-head of the body is more constant; for the deflection and resistance at the prow are observed not to be affected by the length of the body. Mr Buat, by a very nice analysis of many circumstances, comes to this conclusion, that the whole quantity of fluid, which in this manner accompanies the solid body, remains the same whatever is the velocity. He might have deduced it at once, from the consideration that the curves described by the filaments are the same in all velocities.

He then relates a number of experiments made to find certain the absolute quantity thus made to accompany the body. These were made by causing pendulums to oscillate in fluids. Newton had determined the resistances to such oscillation by the diminution of the arches of vibration. Mr Buat determines the quantity of dragged fluid by the increase of their duration; for this stagnation or dragging is in fact adding a quantity of matter to be moved, without any addition to the moving force. It was ingeniously observed by Newton, that the time of oscillation was not sensibly affected by the resistance of the fluid: a compensation, almost complete, being made by the diminution of the arches of vibration; and experiment confirmed this. If, therefore, a great augmentation of the time of vibration be observed, it must be ascribed to the additional quantity of matter which is thus dragged into motion, and it may be employed for its measurement. Thus, let a be the length of a pendulum swinging seconds in vacuo, and l the length of a second's pendulum swinging in a fluid. Let p be the weight of the body in the fluid, and P the weight of the fluid displaced by it; $P+p$ will express its weight in vacuo, and $\frac{P+p}{p}$ will be the ratio

of these weights. We shall therefore have $\frac{P+p}{p} =$

$$\frac{a}{l} \text{ and } l = \frac{ap}{P+p}.$$

Let nP express the sum of the fluid displaced, and the fluid dragged along, n being a number greater than unity, to be determined by experiment. The mass in motion is no longer $P+p$, but $P+nP$, while its weight in the fluid is still p . Therefore we must have

$$l = \frac{ap}{nP+p} = \frac{a}{n+1}, \text{ and } n = \frac{p}{P} \left(\frac{a}{l} - 1 \right).$$

A prodigious number of experiments made by Mr Buat on spheres vibrating in water gave values of n , which were very constant, namely, from 1,5 to 1,7; and by considering the circumstances which accompanied the variations of n (which he found to arise chiefly from the curvature of the path described by the ball),

Resistance ball), he states the mean value of the number n at 1,583. So that a sphere in motion drags along with it about $\frac{6}{7}$ of its own bulk of fluid with a velocity equal to its own.

He made similar experiments with prisms, pyramids, and other bodies, and found a complete confirmation of his assertion, that prisms of equal lengths and sections, though dissimilar, dragged equal quantities of fluid; that similar prisms and pyramids not similar, but whose length were as the square-root of their sections, dragged quantities proportional to their bulks.

He found a general value of n for prismatic bodies, which alone may be considered as a valuable truth; namely, that $n = 0,705 \frac{\sqrt{s}}{7} + 1,13$.

From all these circumstances, we see an intimate connection between the pressures, non-pressures, and the fluid dragged along with the body. Indeed this is immediately deducible from the first principles; for what Mr Buat calls the *dragged fluid* is in fact a certain portion of the whole change of motion produced in the direction of the bodies motion.

It was found, that with respect to thin planes, spheres, and pyramidal bodies of equal bases, the resistances were inversely as the quantities of fluid dragged along.

The intelligent reader will readily observe, that these views of the Chevalier Buat are not so much discoveries of new principles as they are classifications of consequences, which may all be deduced from the general principles employed by D'Alembert and other mathematicians. But they greatly assist us in forming notions of different parts of the procedure of nature in the mutual action of fluids and solids on each other. This must be very acceptable in a subject which it is by no means probable that we shall be able to investigate with mathematical precision. We have given an account of these last observations, that we may omit nothing of consequence that has been written on the subject; and we take this opportunity of recommending the *Hydraulique* of Mr Buat as a most ingenious work, containing more original, ingenious, and practically useful thoughts, than all the performances we have met with. His doctrine of the *principle of uniform motion of fluids in pipes and open canals*, will be of immense service to all engineers, and enable them to determine with sufficient precision the most important questions in their profession; questions which at present they are hardly able to guess at. See RIVERS and WATER-Works.

Change of resistance produced by the void behind a body
The only circumstance which we have not noticed in detail, is the change of resistance produced by the void, or tendency to a void, which obtains behind the body; and we omitted a particular discussion, merely because we could say nothing sufficiently precise on the subject. Persons not accustomed to the discussions in the physico-mathematical sciences, are apt to entertain doubts or false notions connected with this circumstance, which we shall attempt to remove; and with this we shall conclude this long and unsatisfactory dissertation.

Explained. If a fluid were perfectly incompressible, and were contained in a vessel incapable of extension, it is impossible that any void could be formed behind the body; and in this case it is not very easy to see how motion could be performed in it. A sphere moved in such a medium could not advance the smallest distance, unless some particles of the fluid, in filling up the space left by it, moved with a velocity next to infinite. Some

degree of compressibility, however small, seems necessary. If this be insensible, it may be rigidly demonstrated, that an external force of compression will make no sensible change in the internal motions, or in the resistances. This indeed is not obvious, but is an immediate consequence of the *quaquaversum* pressure of fluids. As much as the pressure is augmented by the external compressions on one side of a body, so much is it augmented on the other side; and the same must be said of every particle. Nothing more is necessary for securing the same motions by the same partial and internal forces; and this is fully verified by experiment. Water remains equally fluid under any compressions. In some of Sir Isaac Newton's experiments balls of four inches diameter were made so light as to preponderate in water only three grains. These balls descended in the same manner as they would have descended in a fluid where the resistance was equal in every part; yet, when they were near the bottom of a vessel nine feet deep, the compression round them was at least 2400 times the moving force; whereas, when near the top of the vessel, it was not above 50 or 60 times.

But in a fluid sensibly compressible, or which is not confined, a void may be left behind the body. Its motion may be so swift that the surrounding pressure may not suffice for filling up the deserted space; and, in this case, a statical pressure will be added to the resistance. This may be the case in a vessel or pond of water having an open surface exposed to the finite or limited pressure of the atmosphere. The question now is, whether the resistance will be increased by an increase of external pressure? Supposing a sphere moving near the surface of water, and another moving equally fast at four times the depth. If the motion be so swift that a void is formed in both cases, there is no doubt but that the sphere which moves at the greatest depth is most resisted by the pressure of the water. If there is no void in either case, then, because the quadruple depth would cause the water to flow in with only a double velocity, it would seem that the resistance would be greater; and indeed the water flowing in laterally with a double velocity produces a quadruple non-pressure.— But, on the other hand, the pressure at a small depth may be insufficient for preventing a void, while that below effectually prevents it; and this was observed in some experiments of Chevalier de Borda. The effect, therefore, of greater immersion, or of greater compression, in an elastic fluid, does not follow a precise ratio of the pressure, but depends partly on absolute quantities. It cannot, therefore, be stated by any very simple formula what increase or diminution of resistance will result from a greater depth; and it is chiefly on this account that experiments made with models of ships and mills are not conclusive with respect to the performance of a large machine of the same proportions, without corrections, sometimes pretty intricate. We assert, however, with great confidence, that this is of all methods the most exact, and infinitely more certain than any thing that can be deduced from the most elaborate calculation from theory. If the resistances at all depths be equal, the proportionality of the total resistance to the body is exact, and perfectly conformable to observation. It is only in great velocities where the depth has any material influence, and the influence is not near so considerable as we should, at first sight, suppose; for, in estimating the effect of immersion, which has a relation

Resistance. to the difference of pressure, we must always take in the pressure of the atmosphere; and thus the pressure at 33 feet deep is not 33 times the pressure at one foot deep, but only double, or twice as great. The atmospheric pressure is omitted only when the resisted plane is at the very surface. D'Ulloa, in his *Examenio Maritimo*, has introduced an equation expressing this relation; but, except with very limited conditions, it will mislead us prodigiously. To give a general notion of its foundation, let AB (fig. 23.) be the section of a plane moving through a fluid in the direction CD, with a known velocity. The fluid will be heaped up before it above its natural level CD, because the water will not be pushed before it like a solid body, but will be pushed aside. And it cannot acquire a lateral motion any other way than by an accumulation, which will diffuse itself in all directions by the law of undulatory motion. The water will also be left lower behind the plane, because time *must* elapse before the pressure of the water behind can make it fill the space. We may acquire some notion of the extent of both the accumulation and depression in this way. There is a certain depth CF ($= \frac{v^2}{2g}$, where v is the velocity, and g the accelerating power of gravity) under the surface, such that water would flow through a hole at F with the velocity of the plane's motion. Draw a horizontal line FG. The water will certainly touch the plane in G, and we may suppose that it touches it no higher up. Therefore there will be a hollow, such as CGE. The elevation HE will be regulated by considerations nearly similar. ED must be equal to the velocity of the plane, and HE must be its productive height. Thus, if the velocity of the plane be one foot *per* second, HE and EG will be $\frac{1}{16}$ of an inch. This is sufficient (though not exact) for giving us a notion of the thing. We see that from this must arise a pressure in the direction DC, viz. the pressure of the whole column HG.

Something of the same kind will happen although the plane AB be wholly immersed, and this even to some depth. We see such elevations in a swift running stream, where there are large stones at the bottom.—This occasions an excess of pressure in the direction opposite to the plane's motion; and we see that there must, in every case, be a relation between the velocity and this excess of pressure. This D'Ulloa expresses by an equation. But it is very exceptionable, not taking properly into the account the comparative facility with which the water can heap up and diffuse itself. It must always heap up till it acquires a sufficient head of water to produce a lateral and progressive diffusion sufficient for the purpose. It is evident, that a smaller elevation will suffice when the body is more immersed, because the check or impulse given by the body below is propagated, not vertically only, but in every direction; and therefore the elevation is not confined to that part of the surface which is immediately above the moving body, but extends so much farther laterally as the centre of agitation is deeper: Thus, the elevation necessary for the passage of the body is so much smaller; and it is the *height* only of this accumulation or wave which determines the backward pressure on the body. D'Ulloa's equation may happen to quadrate with two experiments at different depths, without being nearly just; for *any* two points may be in a curve, without exhibiting its

equation. Three points will do it with some approach to precision; but four, at least, are necessary for giving any notion of its nature. D'Ulloa has only given two experiments, which we mentioned in another place.

We may here observe, that it is this circumstance which immediately produces the great resistance to the motion of a body through a fluid in a narrow canal.—The fluid cannot pass the body, unless the area of the section be sufficiently extensive. A narrow canal prevents the extension sidewise. The water must therefore heap up, till the section and velocity of diffusion are sufficiently enlarged, and thus a great backward pressure is produced. (See the second series of Experiments by the French Academicians; see also Franklin's Essays.) It is important, and will be considered in another place.

Thus have we attempted to give our readers some account of one of the most interesting problems in the whole of mechanical philosophy. We are sorry that so little advantage can be derived from the united efforts of the first mathematicians of Europe, and that there is so little hope of greatly improving our scientific knowledge of the subject. What we have delivered will, however, enable our readers to peruse the writings of those who have applied the theories to practical purposes. Such, for instance, are the treatises of John Bernoulli, of Bouguer, and of Euler, on the construction and working of ships, and the occasional dissertations of different authors on water-mills. In this last application the ordinary theory is not without its value, for the impulses are nearly perpendicular; in which case they do not materially deviate from the duplicate proportion of the sine of incidence. But even here this theory, applied as it commonly is, misleads us exceedingly. The impulse on one float may be accurately enough stated by it; but the authors have not been attentive to the motion of the water after it has made its impulse; and the impulse on the next float is stated the same as if the parallel filaments of water, which were not stopped by the preceding float, did impinge on the opposite part of the second, in the same manner, and with the same obliquity and energy, as if it were detached from the rest. But this does not in the least resemble the real process of nature.

Suppose the floats B, C, D, H (fig. 24.) of a wheel immersed in a stream whose surface moves in the direction AK, and that this surface meets the float B in E. The part BE alone is supposed to be impelled; whereas the water, checked by the float, heaps up on it to e .—Then drawing the horizontal line BF, the part CF of the next float is supposed to be all that is impelled by the parallel filaments of the stream; whereas the water bends round the lower edge of the float B by the surrounding pressure, and rises on the float c all the way to f . In like manner, the float D, instead of receiving an impulse on the very small portion DG, is impelled all the way from D to g , not much below the surface of the stream. The surfaces impelled at once, therefore, greatly exceed what this slovenly application of the theory supposes, and the whole impulse is much greater; but this is a fault in the application, and not in the theory. It will not be a very difficult thing to acquire a knowledge of the motion of the water which has passed the preceding float, which, though not accurate, will yet approximate considerably to the truth; and then

Resolution
Respira-
tion.

then the ordinary theory will furnish maxims of construction which will be very serviceable. This will be attempted in its proper place; and we shall endeavour, in our treatment of all the practical questions, to derive useful information from all that has been delivered on the present occasion.

RESOLUTION of IDEAS. See LOGIC, Part I. ch. 3.

RESOLUTION, in music. To *resolve* a discord or dissonance, says Rousseau, is to carry it according to rule into a consonance in the subsequent chord. There is for that purpose a procedure prescribed, both for the fundamental bass of the dissonant chord, and for the part by which the dissonance is formed.

There is no possible manner of resolving a dissonance which is not derived from an operation of cadence: it is then by the kind of cadence which we wish to form, that the motion of the fundamental bass is determined, (see CADENCE). With respect to the part by which the dissonance is formed, it ought neither to continue in its place, nor to move by disjointed gradations; but to rise or descend diatonically, according to the nature of the dissonance. Theorists say, that major dissonances ought to rise, and minor to descend; which is not however without exception, since in particular chords of harmony, a seventh, although major, ought not to rise, but to descend, unless in that chord which is, very incorrectly, called *the chord of the seventh redundant*. It is better then to say, that the seventh and all its derivative dissonances ought to descend; and that the sixth superadded, and all its derivative dissonances, should rise. This is a rule truly general, and without any exception. It is the same case with the rule of resolving dissonances. There are some dissonances which cannot be prepared; but there is by no means one which ought not to be resolved.

With respect to the sensible note, improperly called a *major dissonance*, if it ought to ascend, this is less on account of the rule for resolving dissonances, than on account of that which prescribes a diatonic procedure, and prefers the shortest road; and in reality, there are cases, as that of the interrupted cadence, in which this sensible note does not ascend.

In chords by supposition, one single chord often produces two dissonances; as the seventh and ninth, the ninth and fourth, &c. Then these two dissonances ought to have been prepared, and both must likewise be resolved; it is because regard should be paid to every thing which is discordant, not only in the fundamental, but even in the continued bass.

RESOLUTION, in chemistry, the reduction of a mixed body into its component parts or first principles, as far as can be done by a proper analysis.

RESOLUTION, in medicine, the disappearing of any tumor without coming to suppuration or forming an abscess.

RESOLVENTS, in medicine, such as are proper for dissipating tumors, without allowing them to come to suppuration.

RESONANCE, RESOUNDING, in music, &c. a sound returned by the air inclosed in the bodies of stringed instruments, such as lutes, &c. or even in the bodies of wind-instruments, as flutes, &c.

RESPIRATION, the act of respiring or breathing the air. See ANATOMY, n° 118. BLOOD, n° 29. ME-

DICINE, n° 104. PHYSIOLOGY, Sect. I. and PUTREFACTIO *passim*.

RESPIRATION of Fishes. See ICHTHYOLOGY, n° 7, 8, 9.

RESPITE, in law, signifies a delay, forbearance, or prolongation of time, granted to any one for the payment of a debt or the like. See REPRIEVE.

RESPONDENT, in the schools, one who maintains a thesis in any art or science; who is thus called from his being to answer all the objections proposed by the opponent.

RESPONDENTIA. See BOTTOMRY.

RESPONSE, an answer or reply. A word chiefly used in speaking of the answers made by the people to the priest, in the litany, the psalms, &c.

RESSORT, a French word, sometimes used by English authors to signify the jurisdiction of a court, and particularly one from which there is no appeal.—Thus it is said, that the house of lords judge *en dernier ressort*, or in the last ressort.

REST, the continuance of a body in the same place, or its continual application or contiguity to the same parts of the ambient or contiguous bodies; and therefore is opposed to motion. See the article MOTION.

REST, in poetry, is a short pause of the voice in reading, being the same with the cæsura, which, in Alexandrine verses, falls on the sixth syllable; but in verses of 10 or 11 syllables, on the fourth. See POETRY, Part III.

REST-HARROW, or CAMMOCK, the *Ononis Arvensis*. A decoction of this plant has been much recommended to horses labouring under a stoppage of urine. It is the pest of some corn-fields; but in its younger state, before the plant has acquired its thorns, it is a most acceptable food to sheep.

RESTAURATION, the act of re-establishing or setting a thing or person in its former good state.

RESTIO, in botany; a genus of the triandria order, belonging to the diœcia class of plants. The male calyx is an ovate spike of membranaceous scales; the corolla is proper, hexapetalous, and persistent. The female calyx and corolla are as in the male; the germen is roundish, and sex-fulcated; there are three erect and persistent styles; the capsule is roundish, with six plaits, and is rostrated and trilocular; the seeds are oblong and cylindrical.

RESTITUTION, in a moral and legal sense, is restoring a person to his right, or returning something unjustly taken or detained from him.

RESTITUTION of Medals, or *Restituted Medals*, is a term used by antiquaries for such medals as were struck by the emperors, to retrieve the memory of their predecessors.

Hence, in several medals, we find the letters REST. This practice was first begun by Claudius, by his striking afresh several medals of Augustus. Nero did the same; and Titus, after his father's example, struck restitutions of most of his predecessors. Gallienus struck a general restitution of all the preceding emperors on two medals; the one bearing an altar, the other an eagle, without the REST.

RESTIVE, or RESTY, in the manege, a stubborn, unruly, ill-broken horse, that stops, or runs back, instead of advancing forward.

RESTO-

Respira-
tion
||
Restive.

Restoration
||
Resurrection.

RESTORATION, the same with *restauration*. See **RESTAURATION**.

In England, the return of king Charles II. in 1660, is, by way of eminence, called the *Restoration*; and the 29th of May is kept as an anniversary festival, in commemoration of that event, by which the regal and episcopal government was restored.

RESTORATIVE, in medicine, a remedy proper for restoring and retrieving the strength and vigour both of the body and animal spirits.

All under this class, says Quincy, are rather nutritional than medicinal; and are more administered to repair the wastes of the constitution, than to alter and rectify its disorders.

RESTRICTION, among logicians, is limiting a term, so as to make it signify less than it usually does.

RESTRINGENT, in medicine, the same with astringent. See **ASTRINGENTS**.

RESULT, what is gathered from a conference, inquiry, meditation, or the like; or the conclusion and effect thereof.

Definition.

RESURRECTION, in theology, is a rising again from the state of the dead; and is that event, the belief of which constitutes one of the principal articles in the Christian creed.

2
Plan of the article.

In treating of this object of our faith, it has been usual to mention, first, the resurrection of our Blessed Lord, with the character of the witnesses, and the authenticity of the gospel history by which it has been proved, and from which, as a consequence, ours is inferred. But as most of the arguments for his resurrection are contained in the gospels, and as merely to repeat them would afford, we hope, but little information to most of our readers, we mean here to take a view of the several grounds on which the belief of a future existence is supposed to be founded; to collect together some of the sentiments of authors and nations concerning the place where departed spirits reside; concerning the nature of their present state; concerning the kinds of their future destination; that we may afterwards see how far their notions differ and agree with what we consider as the doctrines of Scripture.

3
The notion of a future state unknown to some obscure tribes.

Of a future state, there have sometimes been found a few wandering and obscure tribes who seemed to entertain no notion at all; though it should be remarked, that some of these were likewise observed in so low a degree of savage barbarity as not to be acquainted with the use of the bow, the dart, or the sling, and as not knowing how to wield a club, or to throw a stone, as a weapon of defence*.

*See Robertson's Hist. of America.

4
Has been almost universal.

Wherever the human mind has been cultivated, or properly speaking, begun to be cultivated, the opinion has likewise generally prevailed that human existence is not confined to the present scene; nay, so very general has this notion been found among mankind, that many are puzzled how to account for what they suppose to be almost next to its universality.

5
The origin of this notion derived by some from primeval revelation.

To explain the phenomenon, some have imagined that it is a notion derived by tradition from primeval revelation. They suppose that the first parent of mankind, as a moral agent accountable for his conduct, was informed by his Maker of every thing which it was of importance for him to know; that he must have been acquainted with this doctrine of a future state in particular; and that he could hardly fail to communicate a

matter so interesting to his posterity. They suppose, too, that the history of the translation of Enoch must have made a great noise in the world, and that the remembrance of it must have been long retained and widely diffused; and they find in the book of Job plain intimations of a resurrection from the dead, which, from the manner in which they are introduced, they think that very ancient patriarch must have received through this channel.

It is not thought to be any objection to these suppositions, that the Most High, when delivering his laws from the top of Mount Sinai, did not enforce them by the awful sanctions of a future state. The intelligent reader of the Scriptures knows that the sanctions of a future state belong to a different and more universal dispensation than was that of Moses; that the primeval revelation related to that dispensation; and that the Jewish law, with its temporal sanctions, was introduced only to preserve the knowledge and worship of the true God among a people too gross in their conceptions to have been properly influenced by the view of future rewards and punishments, of such a nature as eye hath not seen, nor ear heard, neither hath it entered into the heart of man to conceive. He sees at the same time, everywhere scattered through the Old Testament, plain indications of the Mosaic economy, being no more than preparatory to the bringing in of a better hope; and he thinks it evident, that such Jews as understood any thing of the nature of that better hope, must have been convinced, that, however the ceremonial rites of their religion might be sufficiently guarded by temporal sanctions, the fundamental principles of all religion and virtue are supported by rewards and punishments to be dispensed in a state beyond the grave. See **PROPHECY** and **THEOLOGY**.

That the progenitors of the human race must have been inspired by their Creator with the knowledge of their immortality, and of every thing necessary to their everlasting welfare, cannot, we should think, be questioned by any one who believes that the world had a beginning, and that it is under the government of goodness and justice. The progress from sense to science is so slow, that however capable we may suppose the earliest inhabitants of this earth to have been of making philosophical discoveries, we cannot believe that the Father of mercies left his helpless creature to discover for himself his future existence. Death, when first presented to him, must have been a ghastly object; and had he been left without any hope of redemption from it, he would undoubtedly have sunk into listless despondency.

But a prospect of immortality is so pleasing to the human mind, that if it was communicated to the first man, it would of course be cherished by his posterity; and there is no difficulty in conceiving how it might be handed down by tradition to very remote ages, among such of his descendants as were not scattered over the face of the earth in small and savage tribes. — In the course of its progress, it would frequently be new-modelled by the ever active imagination; and at last many absurd and fantastic circumstances would doubtless be combined with the original truth, that death puts not an end to human existence.

But though we are firmly convinced that the first principles of useful knowledge, and among them the doctrine of a future state, were communicated to man

by

Resurrection.

6
The usual objections to this opinion of no force.

7
Reasons in support of the opinion.

Fig. 1. N^o 1.

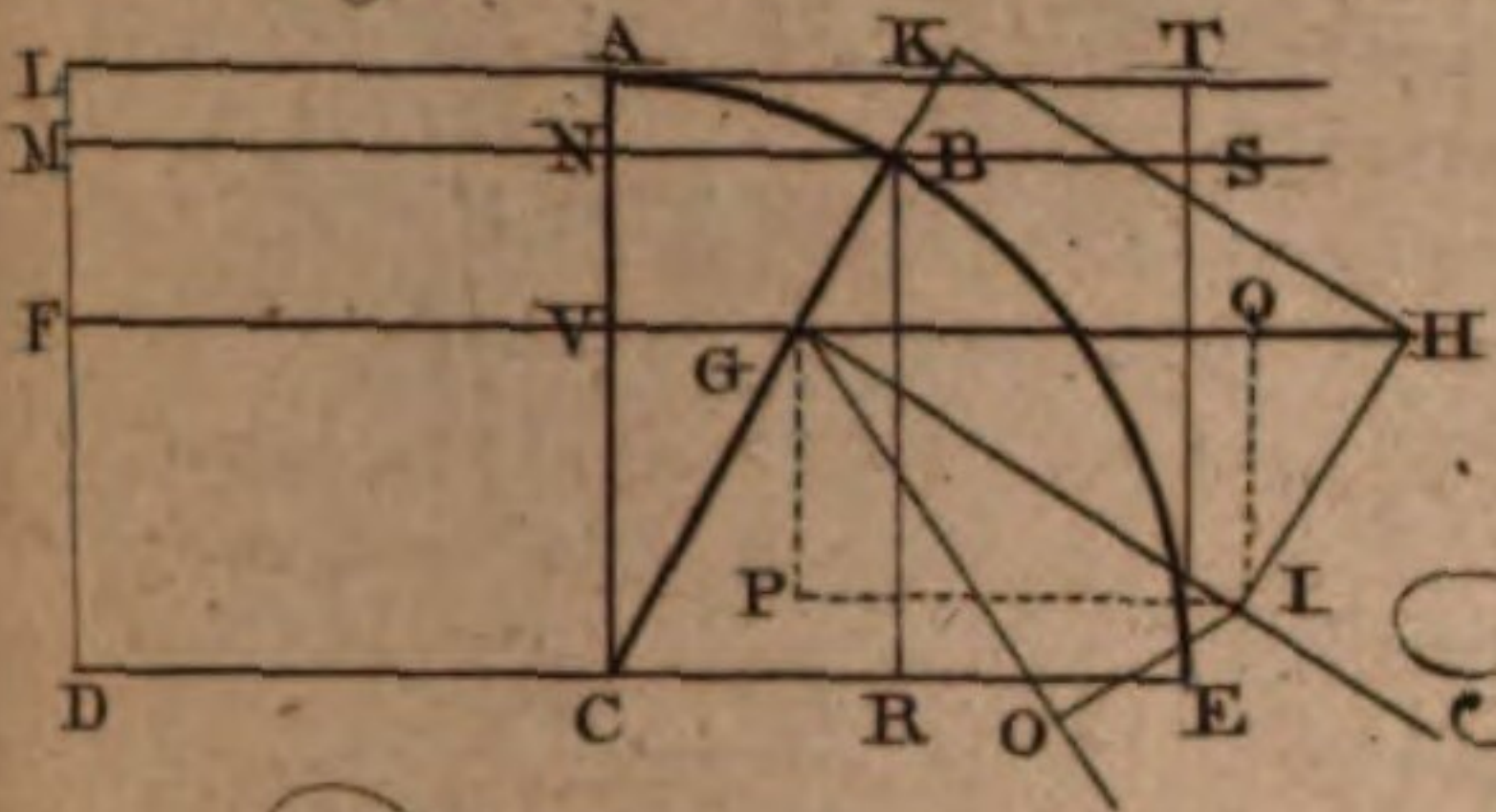


Fig. 1. N^o 2.

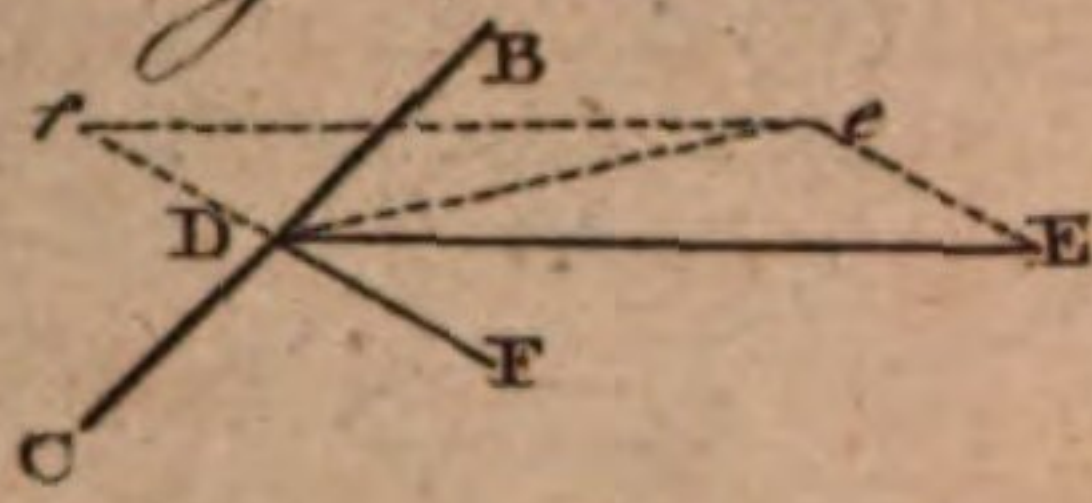


Fig. 1.

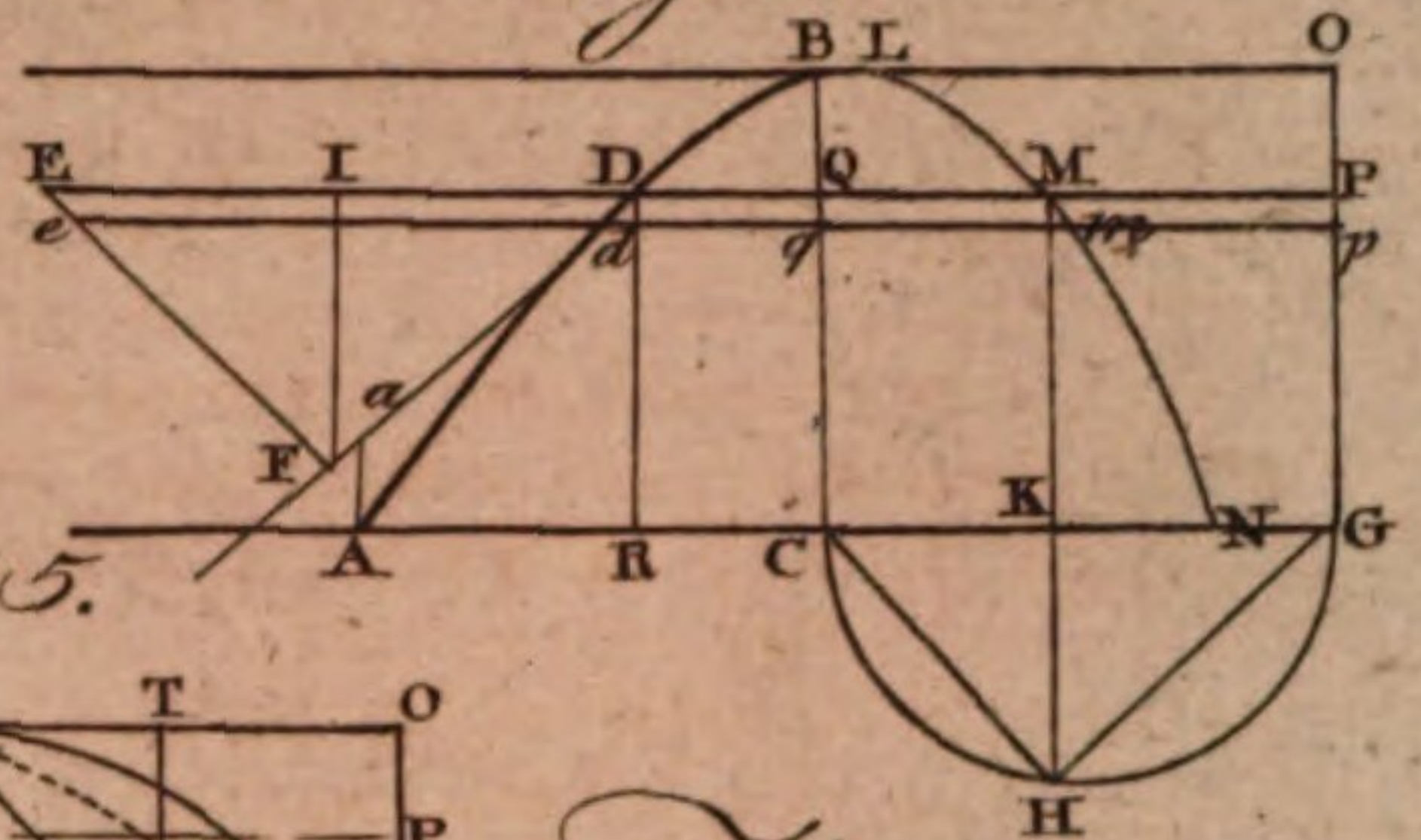


Fig. 2.

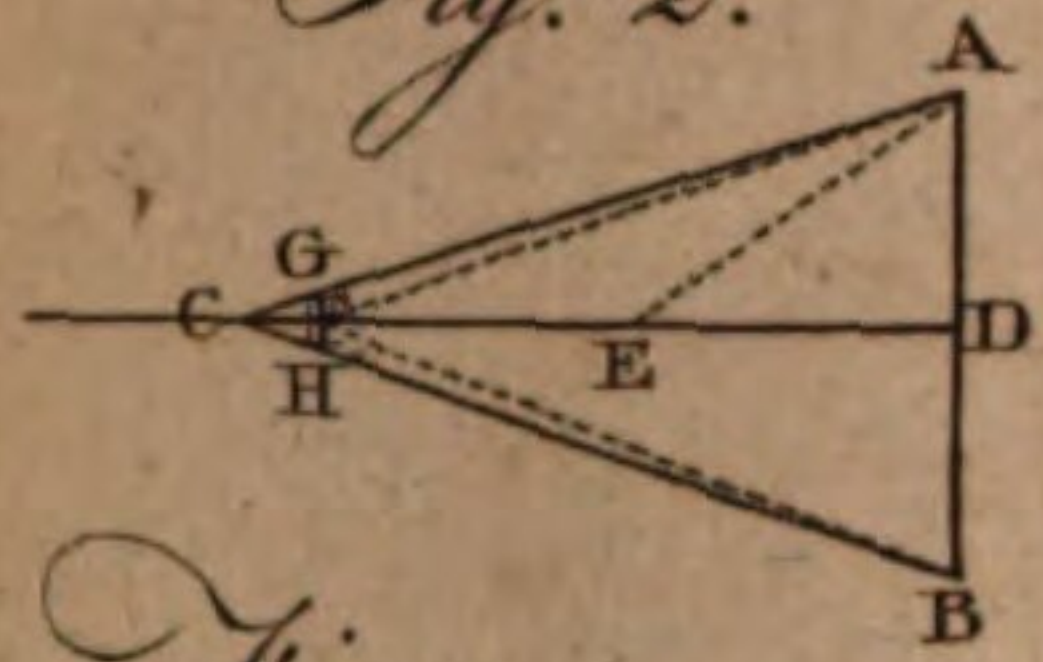


Fig. 3.

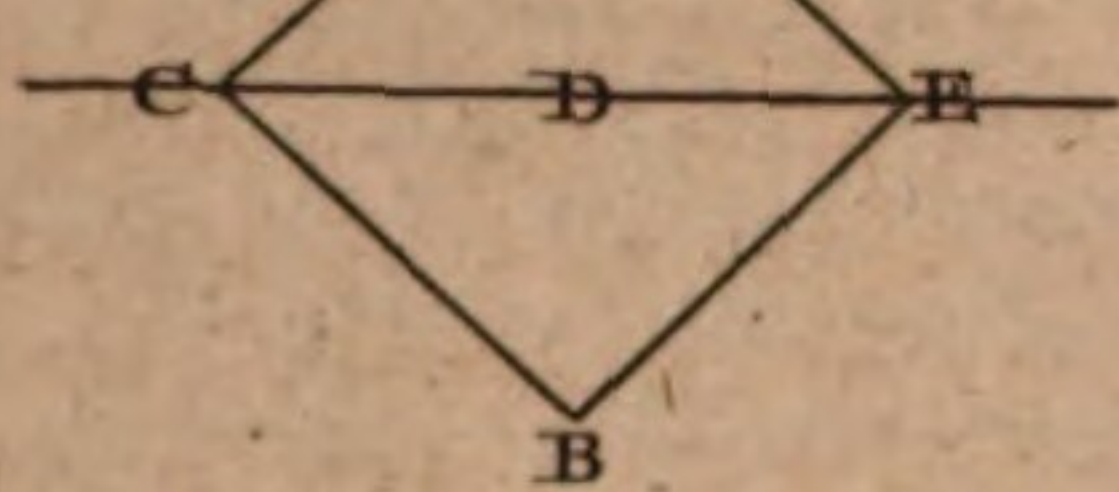


Fig. 5.

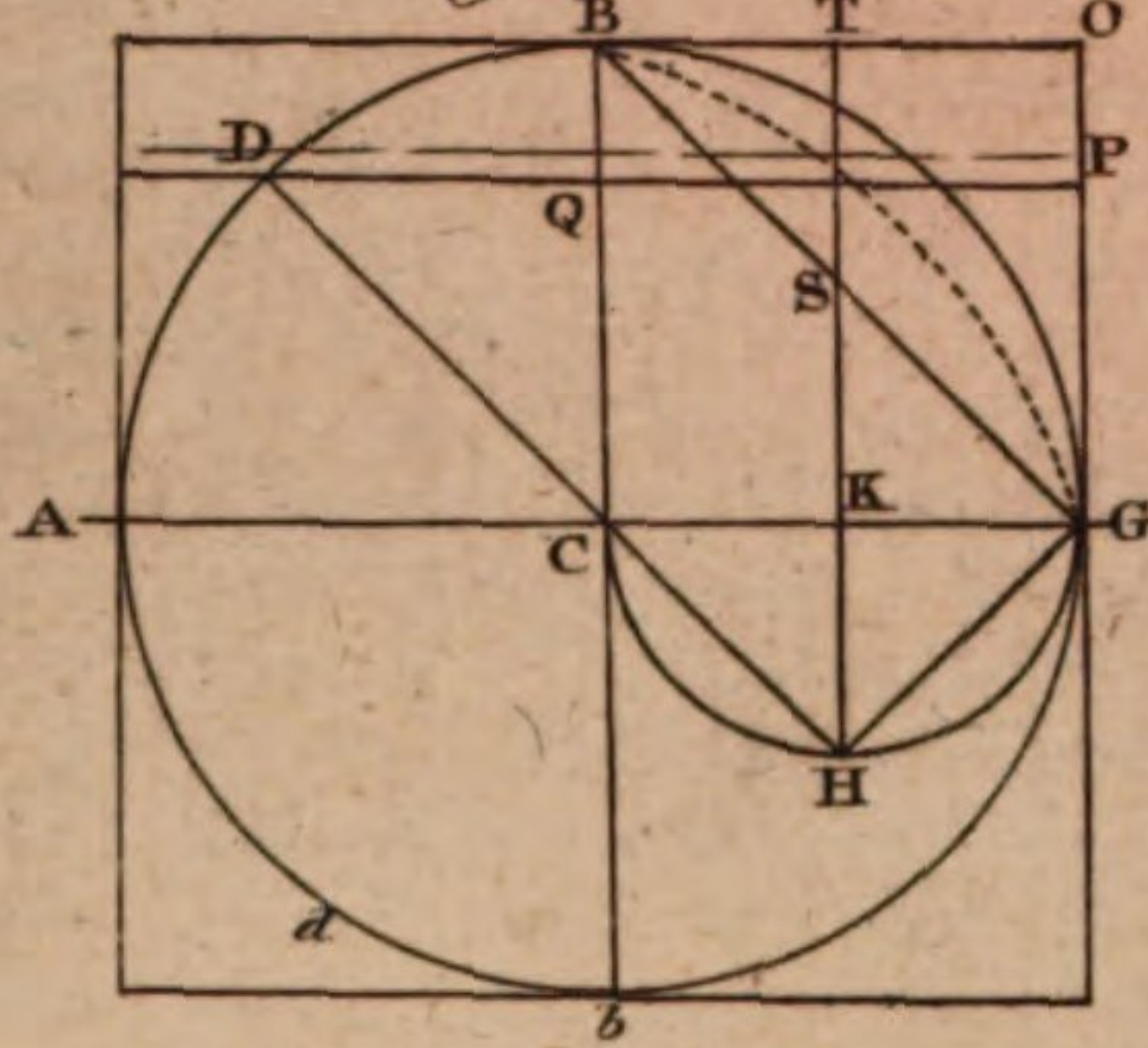


Fig. 6.

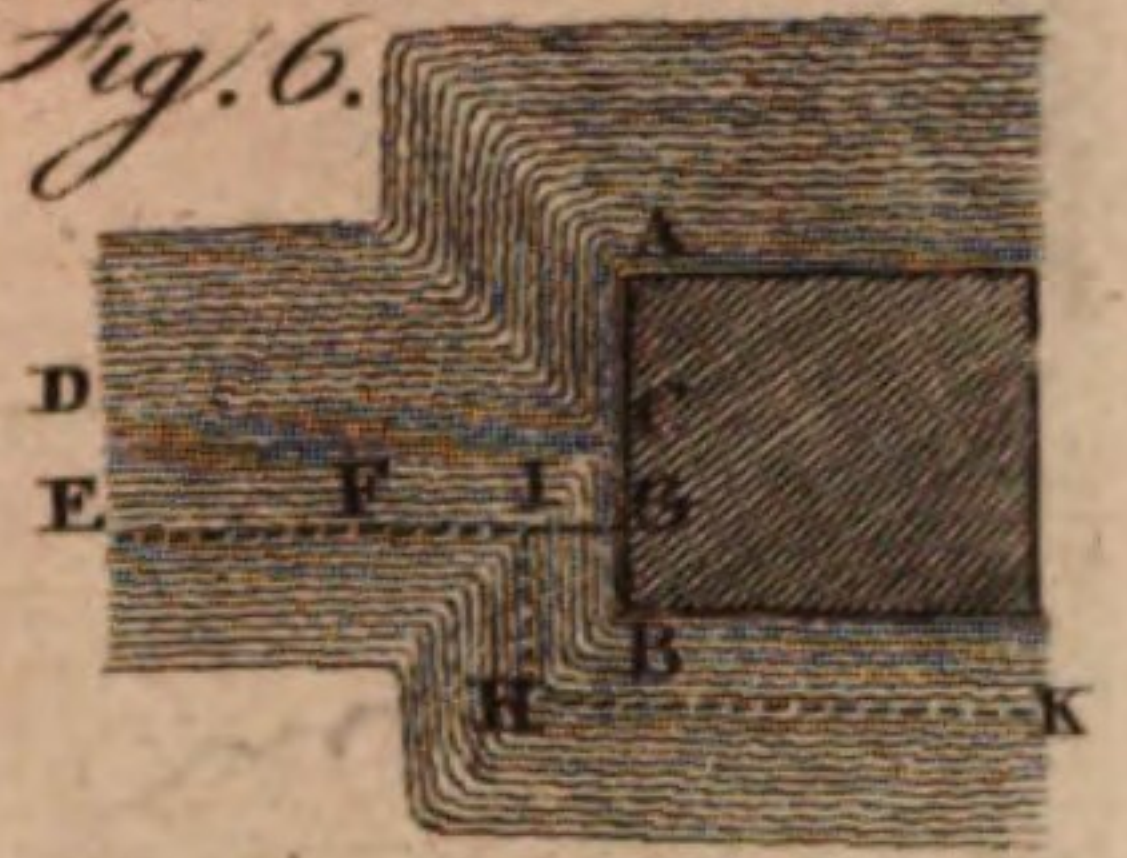


Fig. 12.

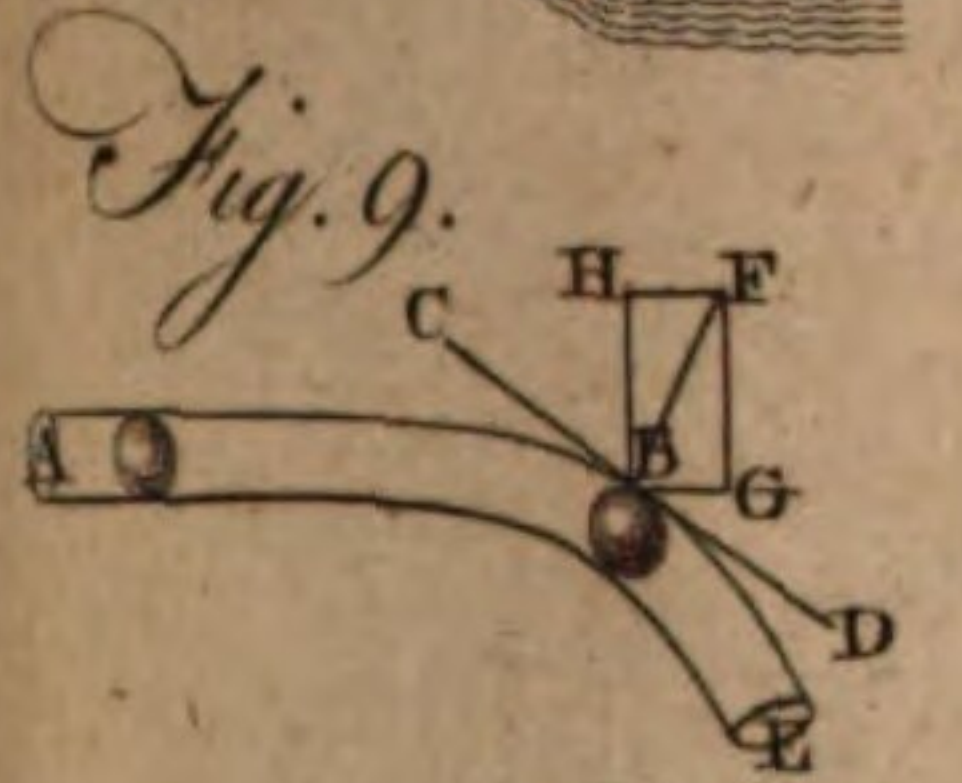
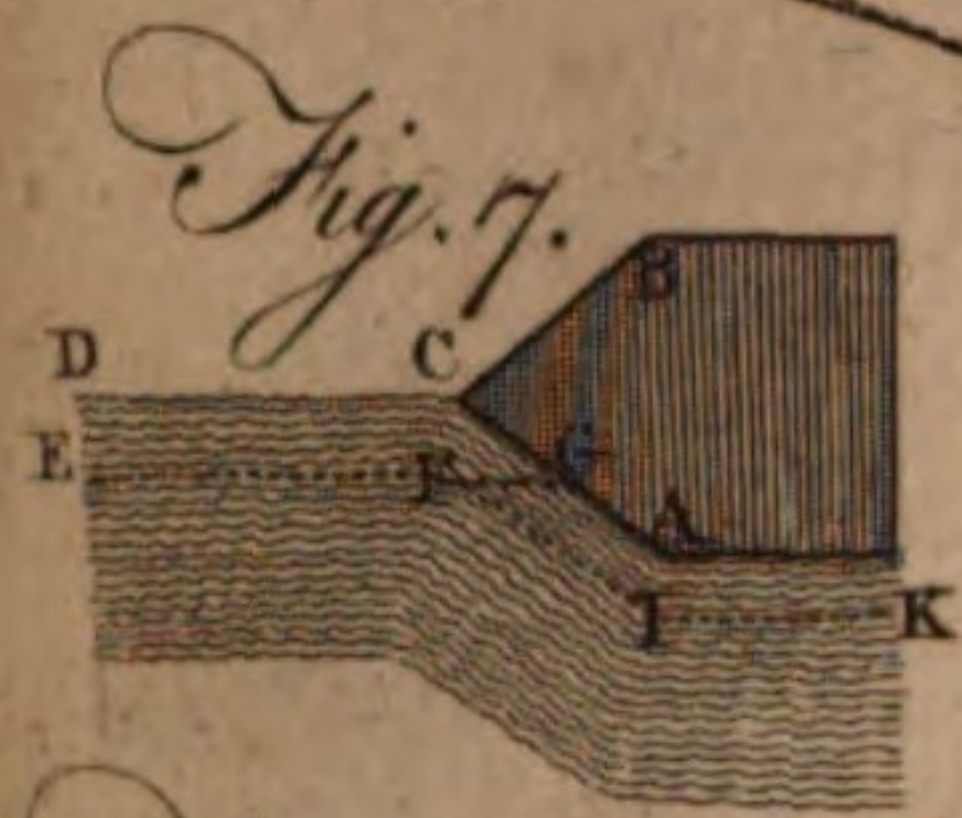
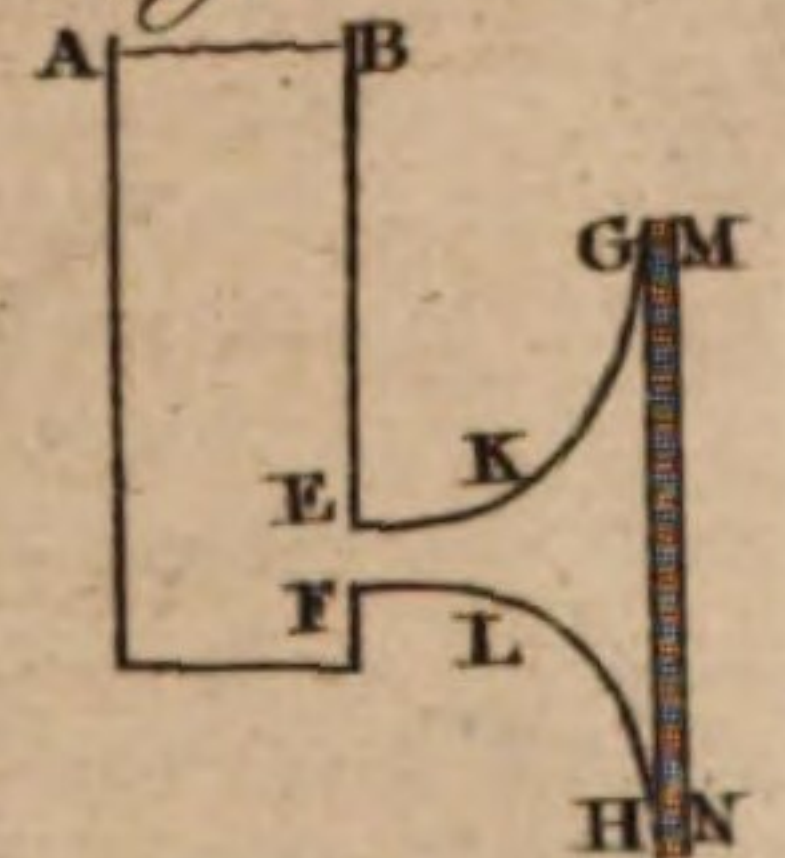


Fig. 11.

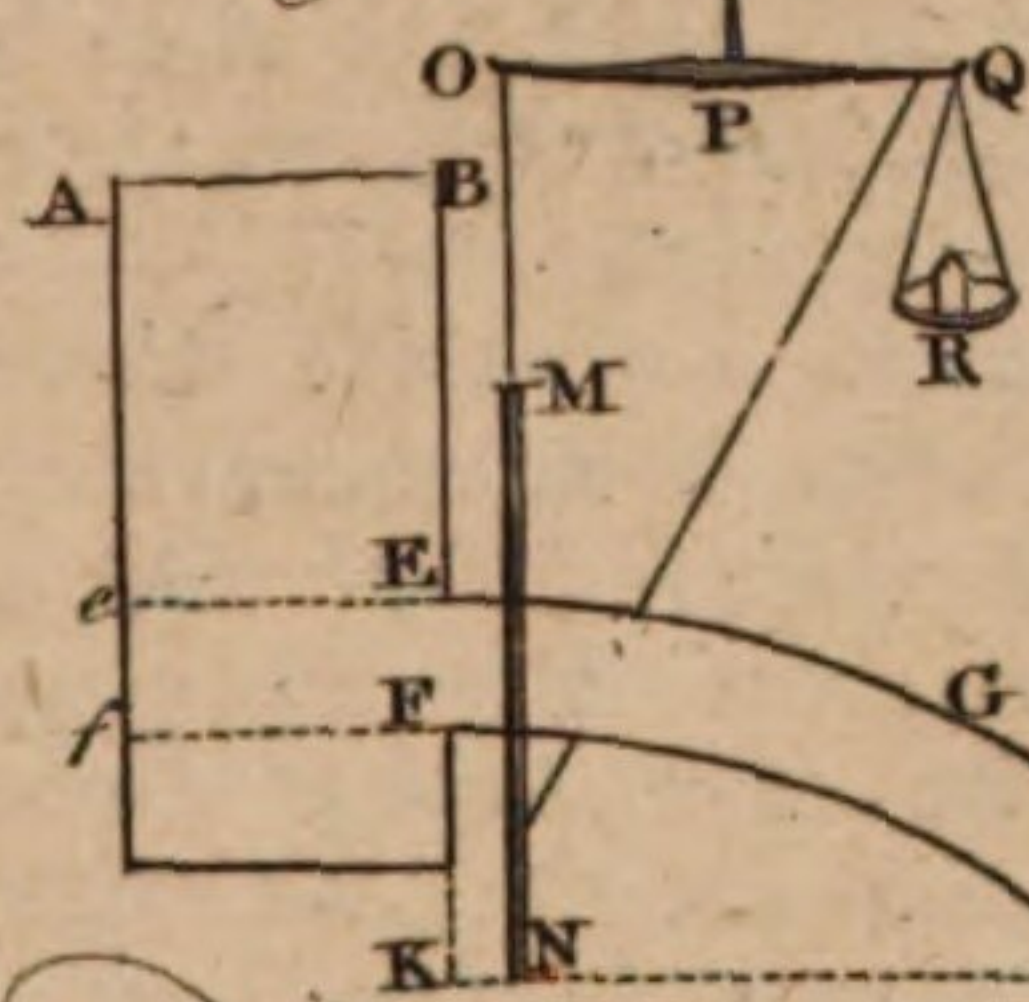


Fig. 13. N^o 1.

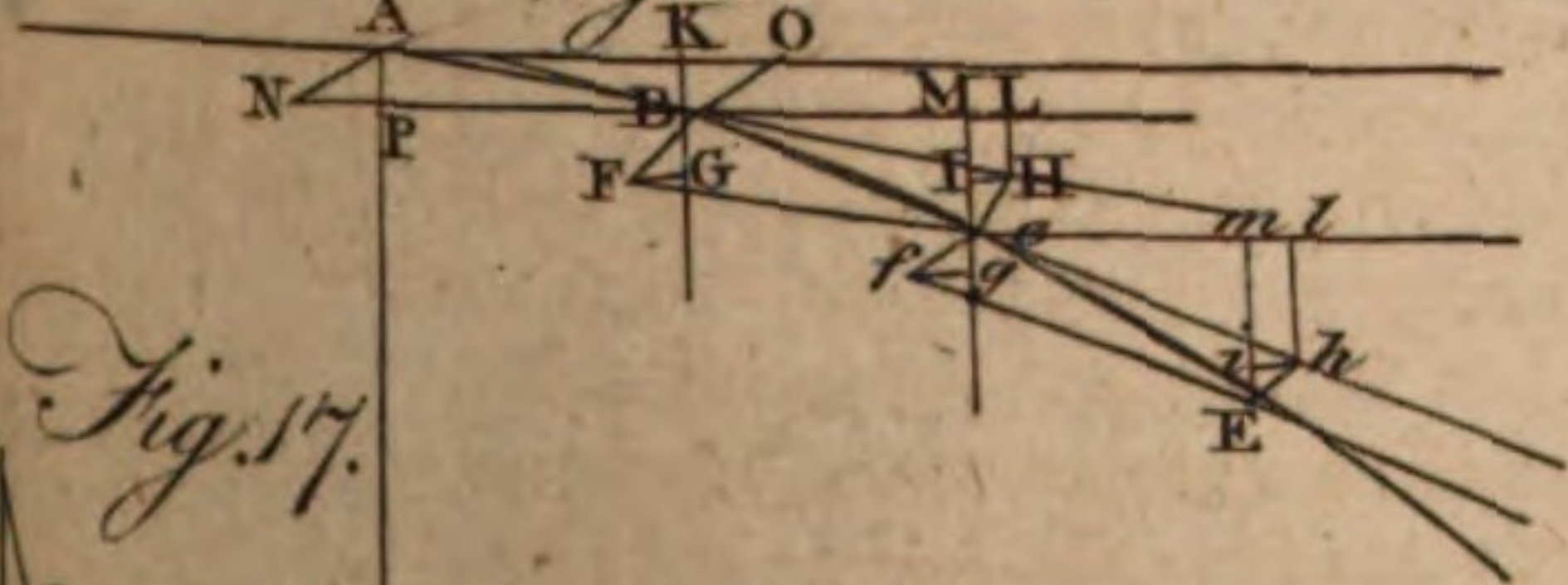


Fig. 14.

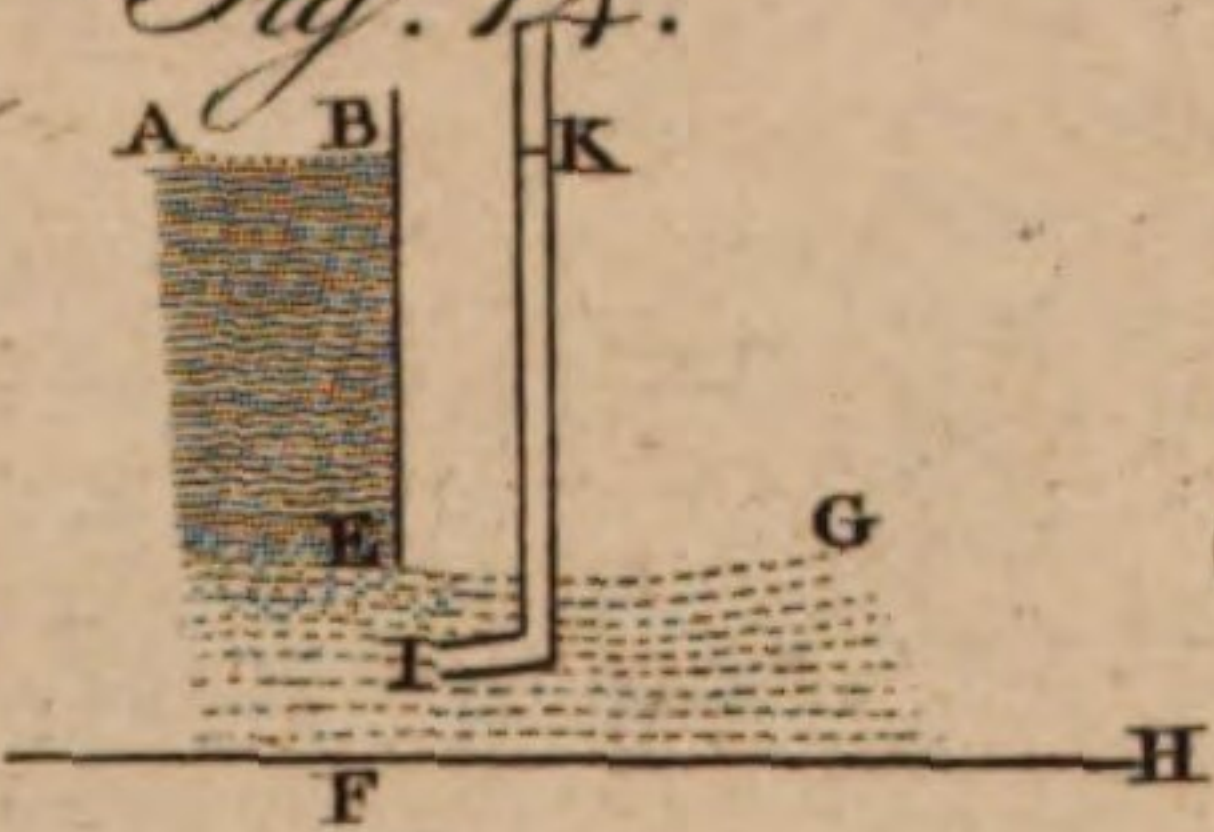


Fig. 15.

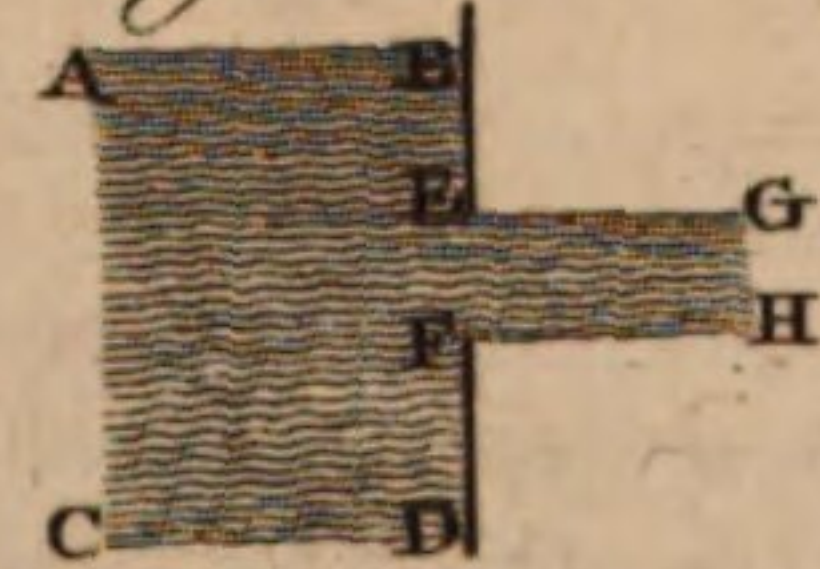


Fig. 16.

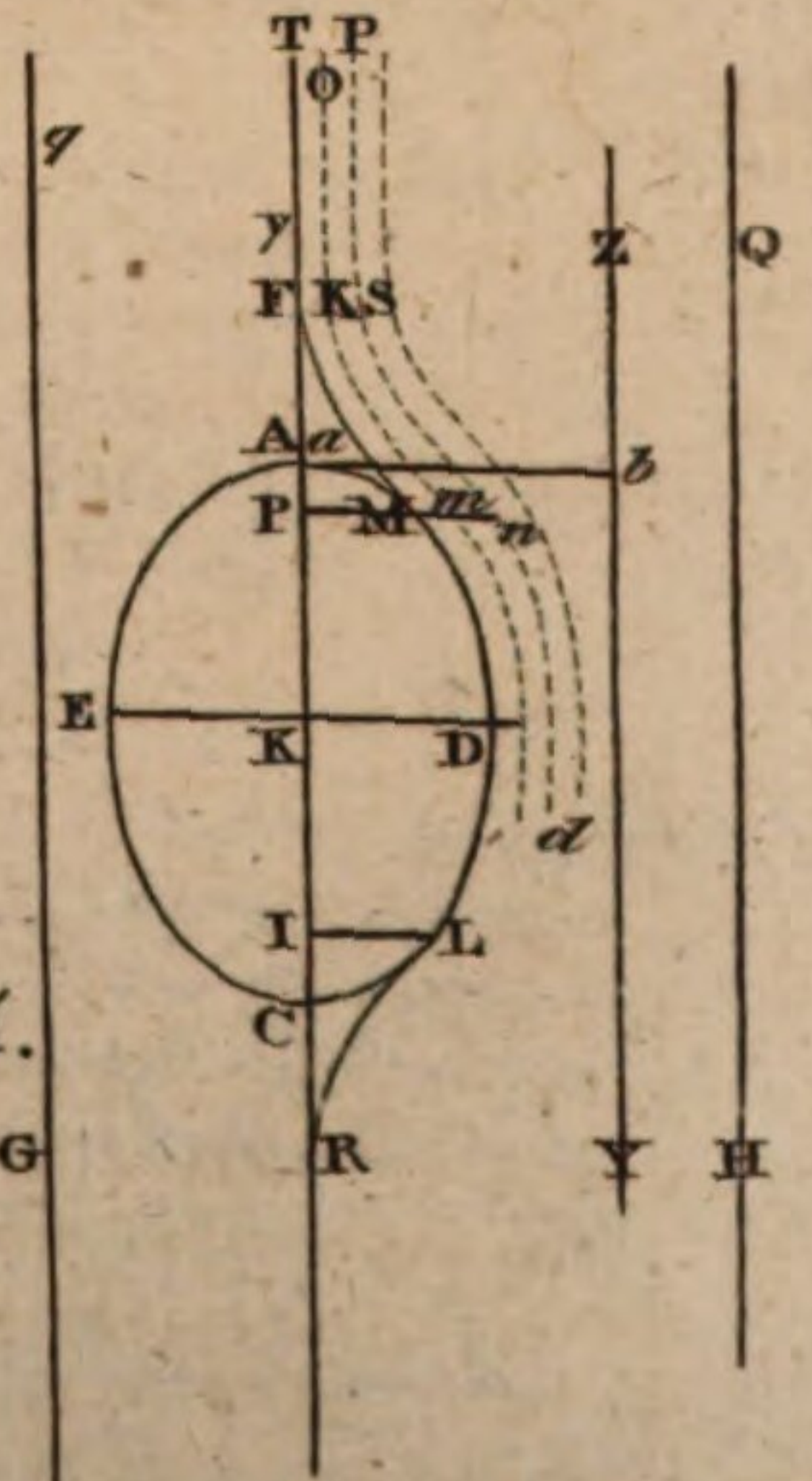


Fig. 13. N^o 2.

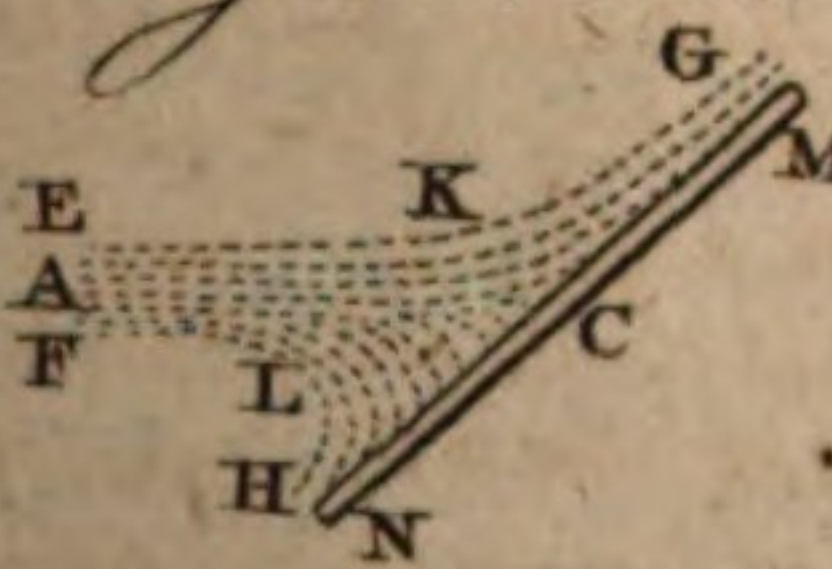


Fig. 22.

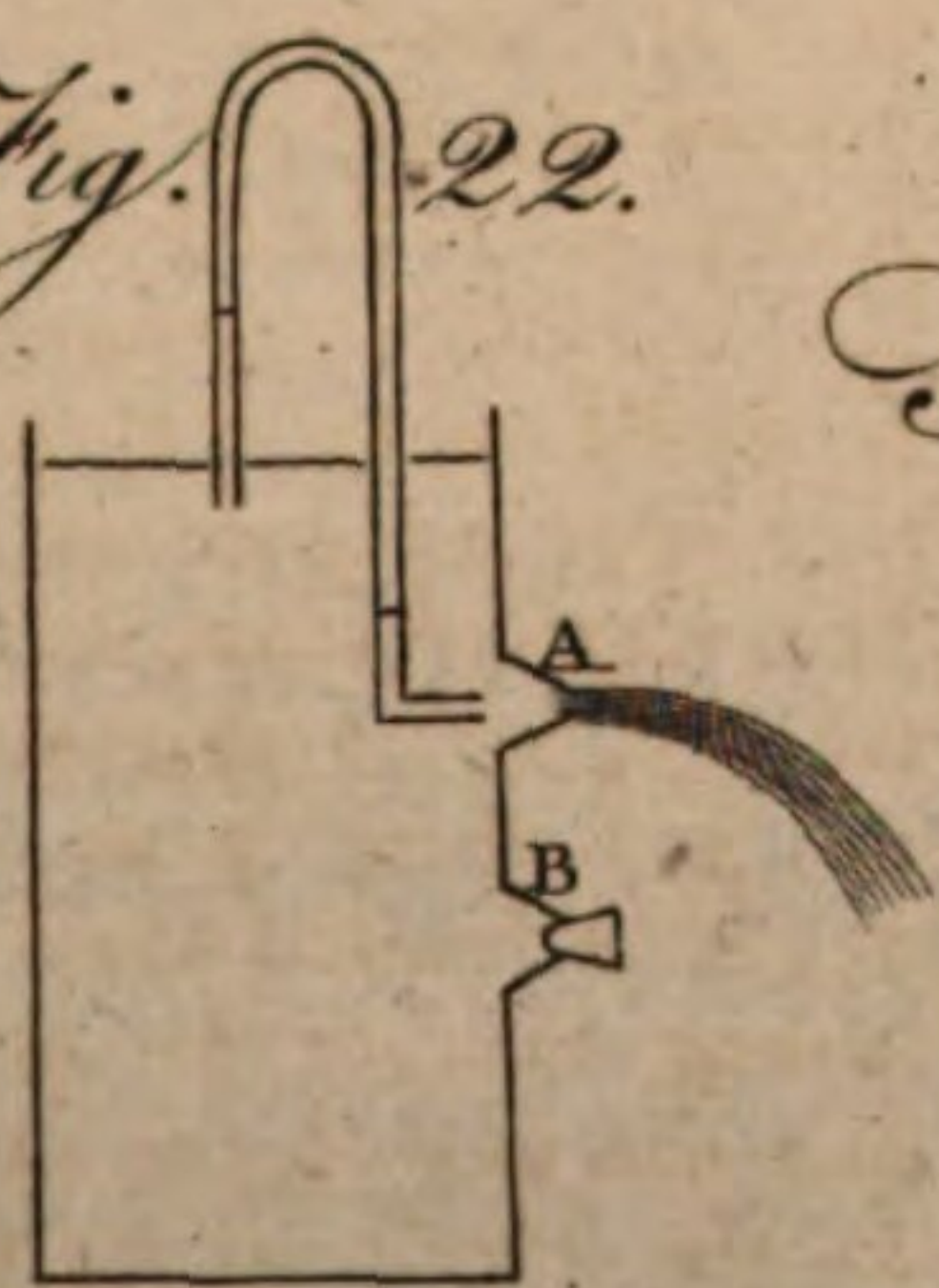


Fig. 20.

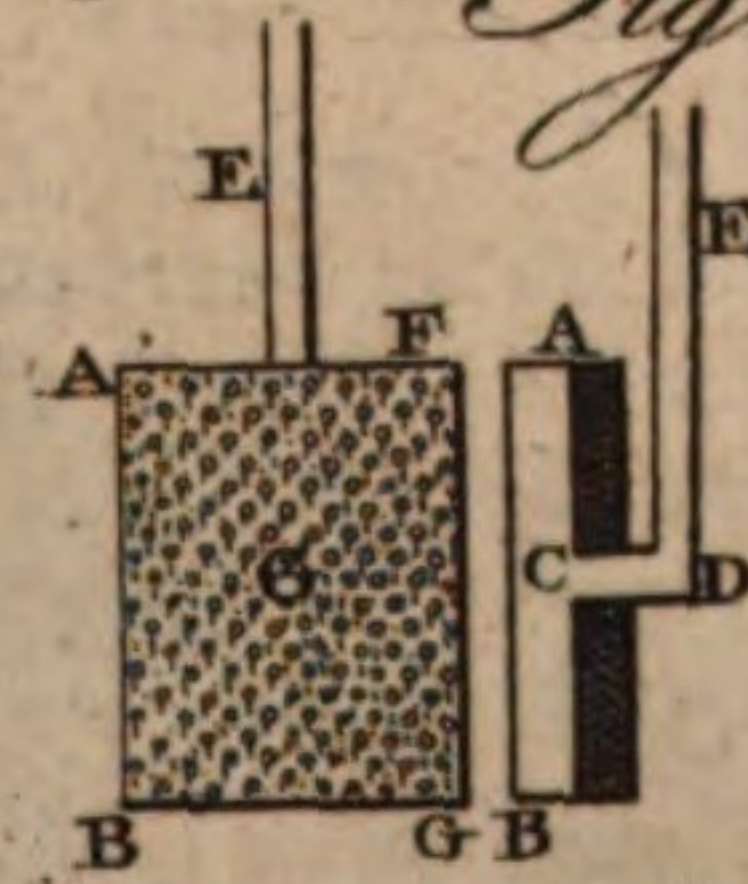


Fig. 21.

Fig. 24.

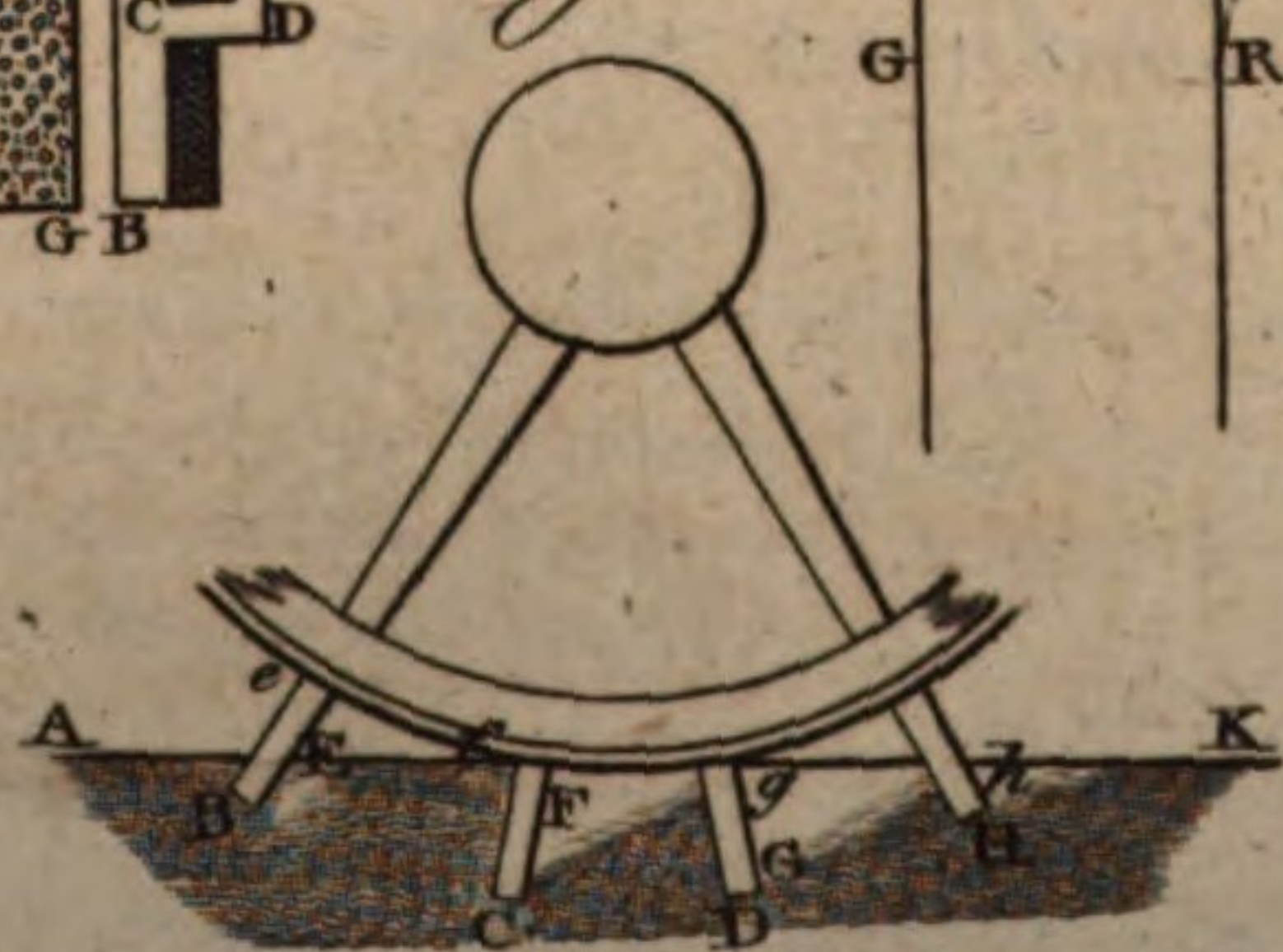


Fig. 18.

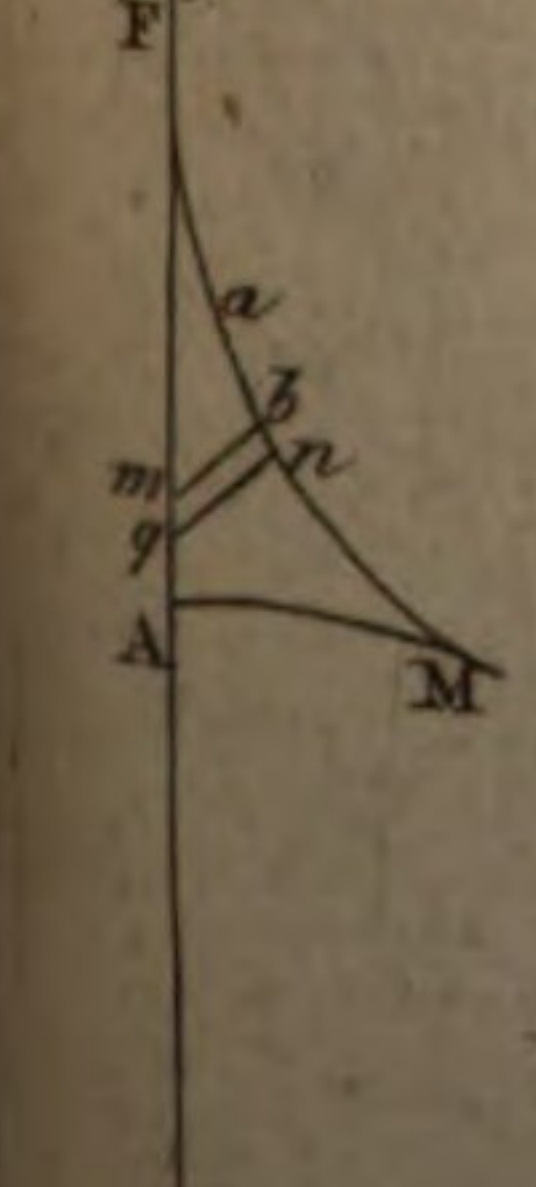


Fig. 19.

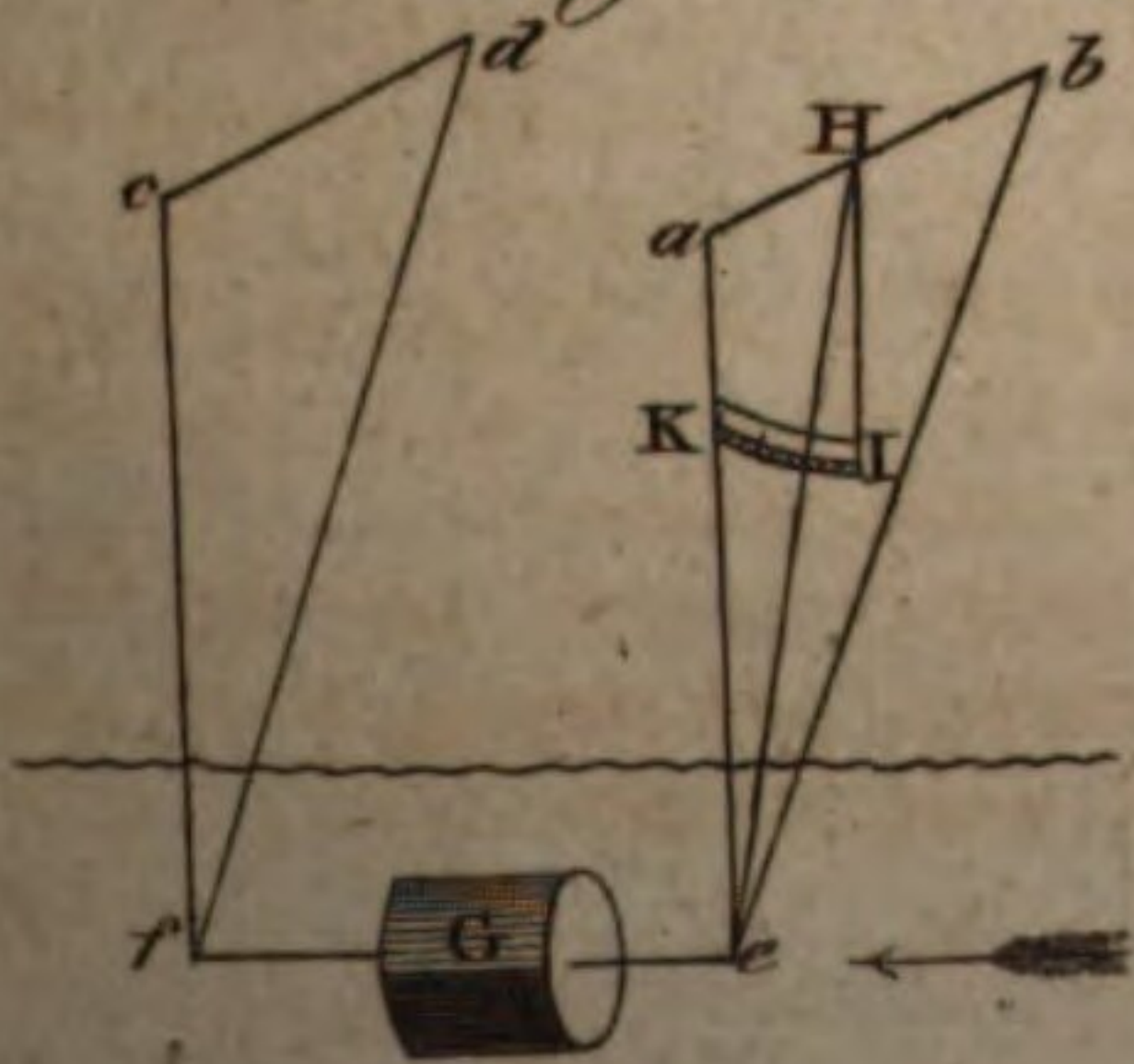


Fig. 23.



Resurrec- by his Maker; and though this doctrine, in large and
tion. permanent societies, might certainly be conveyed more
or less pure to late posterity through the channel of tra-
dition—we are far from attributing so much to tradition
as some writers are disposed to do, or thinking it the
only source from which mankind could derive the belief
of their existence beyond the grave. In small tribes of
savages such a tradition could hardly be preserved; and
yet some indistinct notions of a future state have been
found among tribes who are said to have lost all tradi-
tionary notions even of the being of a God.

Others, therefore, are inclined to believe that, in-
dependent of any traditions, mankind might be led by
certain phenomena to form some conjectures of a future
state. They observe, that although a few individuals
perhaps may, yet it seldom happens that the whole in-
dividuals of any nation are exempted from dreaming:
They observe, too, and this observation is founded on
experience, that the images of the dead are from the
remaining impressions of memory frequently summoned
up in the fancy; and that it appears from all the lan-
guages of rude nations, who pay the greatest attention
to their dreams, and who speak of seeing the dead in
their visions, that these images (A) have always been
taken by them for realities; nay, some of the learned,
and the celebrated Baxter is of the number, are dispo-
sed to doubt whether these appearances be not some-
thing more than illusions of the brain: But whether
they really be so or not, one thing is certain, that all
nations in all countries, in the darkest ages and the ru-
dest periods, are accustomed to dream; and whether
sleeping or waking, in the stillness of the night, in the
gloom of solitude, in the fondness of friendship, in the
ravings of love, the delirium of fever, and the anguish
of remorse, to see and converse with the shades of the
departed; and Lucretius * has remarked, that even the
inferior animals are not exempted from such illusions of
a restless fancy.

For often sleeping racers pant and sweat,
Breathe short, as if they ran their second heat;
As if the barrier down with eager pace
They stretch'd, as when contending for the race.
And often hounds, when sleep hath clos'd their eyes,
They toss, and tumble, and attempt to rise;
They open often, often snuff the air,
As if they prest the footsteps of the deer;
And sometimes wak'd, pursue their fancy'd prey,
The fancy'd deer, that seem to run away,
Till quite awak'd, the follow'd shapes decay.
And softer curs, that lie and sleep at home,
Do often rouse, and walk about the room,
And bark, as if they saw some strangers come.
And birds will start, and seek the woods, by night,
Whene'er the fancy'd hawk appears in sight,
Whene'er they see his wing or hear him fight.

CREECH.

These powers of fancy extend wide over animal crea-

tion; and it is on this general principle that necro-
mancers and dreamers have in all ages established their
trade, that the stories of goblins have at all times so
very easily procured belief, and that

The village matron, round the blazing hearth,
Suspends the infant audience with her tales,
Breathing astonishment! Of witching rhymes
And evil spirits; of the deathbed call
Of him who robb'd the widow and devour'd
The orphan's portion; of unquiet souls
Ris'n from the grave to ease the heavy guilt
Of deeds in life conceal'd; of shapes that walk
At dead of night, and clank their chains, and wave
The torch of hell around the murderer's head.

AIKENSIDE.

Mankind in general would willingly dispense with
these troublesome visits of the dead. To prevent the
return of the *zumbi* or the ghost, some nations of Afri-
ca use many superstitious rites*; and Kolben tells us,
that the frightened Hottentots leave in the hut where a
person has died all the utensils and furniture, lest the
angry ghost, incensed at their avarice, should haunt
them in their dreams, and infest them in the night.
Divines and moralists have laboured to show that these
are merely imaginary terrors: but God and nature seem
to have determined that they shall produce the same
effects upon certain minds as if they were real; and
that while there is any sensibility in the heart, while
there is any remembrance of the past, and any conju-
ring power in the fancy; the ignorant, the benighted,
the timid, shall often meet with the goblins of darkness,
the spectres of the tomb, the apparitions that hover
round the grave, and the forms of the dead in the mid-
night dream. See SPECTRE.

From these phenomena, which have been so common
in all countries and in all ages, what would mankind
naturally infer? Would they not infer, that there is
something in the nature of man that survives death, and
that there is a future state of existence beyond the
grave? Are not still many specimens of this reasoning
preserved in the ancient poets? and is it not thus that
Achilles† reasons after imagining that he saw the ghost
of his friend Patroclus?

'Tis true, 'tis certain, man, though dead, retains
Part of himself; the immortal mind remains:
The form subsists without the body's aid,
Aerial semblance, and an empty shade.
This night my friend, so late in battle lost,
Stood at my side a pensive plaintive ghost;
Ev'n now familiar as in life he came,
Alas! how diff'rent, yet how like the same. POPE.

Lucretius *, a studious observer of nature, though
no friend to the soul's immortality, acknowledges frank-
ly that these phantoms often terrify the mind, haunt
us in our sleep, and meet us while awake. He confesses,
too, that by such appearances mankind have been led
to

(A) These images were called by the Greeks *Εἰδωλα θανόντων*; and among the Romans they had various names, as *umbra*, *lemures*, *manes*, *larvæ*, and were sometimes called *occursacula noctium*, *busforum formidamina*, *sepulchrorum terriculamenta*, *animæ errantes*, which are all comprehended under the *species mortuorum*.

Resurrec-
tion.

to believe the future existence of the soul; but, aware of the consequence,

— *Ne forte animas Acherunte reamur
Effugere, aut umbras inter vivos volitare,*

he endeavours to explain these curious phenomena on some of the odd and fantastic principles of the Epicureans. In doing this, however, he pretends not to deny that these images appear to be real; but candidly acknowledges that

— — — They strike and shake
The airy soul, as when we are awake,
With stroke so lively, that we think we view
The absent dead, and think the image true.

CREECH.

11
Folly of al-
lowing too
much to
tradition.

We here see how the belief of the soul's immortality came to be general among mankind. But for this information we are much more indebted to the poets, who have given us faithful transcripts of nature, than to the philosophers who have wished to entertain us with their own theories, or to those laborious men of erudition, who have dreaded as much to examine the source of an ancient report as the friends of Ulysses to approach the coast of Cimmerian darkness. With them tradition is the ultimate boundary of research: and as gorgons, chimeras, and hydras, have come down to us by tradition; so they, with great sagacity, suspect, that tradition must likewise be at the bottom of the soul's immortality, and occasion the visions and phantoms of the dead.

To tradition we have allowed all that it can justly claim; but we cannot allow it to be the only source of this opinion: and we have felt the highest indignation upon hearing men of learning and genius affirm, from a false zeal for the honour of revelation, that mankind, without this instruction, could never have acquired the art of building huts to screen them from the cold, or have learned the method of propagating their species! The reader must not here suppose that we allude to Polydore Virgil (B). We have in our eye persons now alive, with whom we have conversed on the subject, and who (terrified at the length to which some philosophers have carried the doctrine of instincts, and others the reasoning powers of the mind) have contended, with the utmost earnestness, that we know nothing—not even the functions of our animal nature—but by tradition or written revelation.

12
Opinions of
philoso-
phers.

Having now seen the source of the opinion concerning the future existence of the soul, and pointed out the natural phenomena by which mankind were led to embrace it, we come next to review the arguments by which the philosophers attempted to confirm it.

Pythagoras believed, with the rest of his country, that annihilation was never the end, and that nonentity was never the beginning, of any thing that is. His general doctrine upon this subject was shortly expressed in very few words, *Omnia mutantur, nihil interit*. He afterwards learned from Egyptian priests that the soul migrates into new bodies; and being, it seems, a person of a most extraordinary and astonishing memory, he found there was some truth in the story: for after musing, he began to remember that he was Euphorbus, the son of Pandrus, that was slain by Menelaus in the Trojan war; and upon a jaunt to Peloponnesus, recollected the shield which he had worn at the time of the siege, in one of the temples of Juno at Argos! That none might question the truth of his assertion, his followers presently removed all doubts by the famous argument, the *ipse dixit* of Egyptian origin.

As Pythagoras taught that human souls are frequently thrust into brute shapes, and, as some imagined, by way of punishment; it occurred to Plato, that all bodies, even the human, are a sort of prisons; and that, in consequence of this confinement, the soul was subjected to the rage of desire, appetite, and passion, and to all the wretched miseries of a jail. To explain this mystery, he supposed that desires and appetites belong to a soul that is purely animal residing in the body. But he was perplexed with another difficulty; for as he thought highly of the goodness of Deity, he could not imagine how he should imprison us without a crime. He supposed, therefore, that prior to its union with the present body the soul had existed in one of ether, which it still retains; but that even in this ethereal body it had felt something of impure desire; and happening to indulge the vicious appetite, had contracted some stains of pollution, for which it was confined in its present body as a house of correction to do penance and improve its morals.

To prove this ideal pre-existence of the soul, Plato availed himself of an opinion that was general in his time, that coincided with the doctrines of Pythagoras, and that was partly founded on a sort of reasoning and observation. He thought that matter and intelligence are coeternal (see PLATONISM); that there are various orders of souls; that those of both the man and the brute are parts or emanations (c) of the *anima mundi*, or soul of the world; that all are ultimately parts or emanations of Deity itself; and that all their faculties are more or less restricted and confined, according to those organised systems with which they are connected. Know first (says one delivering his doctrines),

Know first, that heav'n and earth's compacted frame,
And flowing waters, and the starry flame,
And both the radiant lights, one common soul
Inspires, and feeds, and animates, the whole.

This

(B) This writer allots part of a chapter to show, "*Quis primum instituerit artem meretriciam*," as being, in his opinion, a traditionary practice. See Lib. iii. cap. 17. *De Rerum Inventoribus*.

(c) The Deity was conceived by the ancients sometimes as a solid, when inferior souls were called *αποσπασματα* i. e. fragments or parts broken off from him; and sometimes as a fluid, when they were considered as *απορροιαι* or emanations: but from none of these hypotheses did they reason consequentially. Their *αποσπασματα* were often after death reunited to the Deity; and their *απορροιαι* often remained separate and distinct for a long while, without flowing back as they ought to have done, and mingling with the great ocean of spirit.

Resurrec-
tion.

13
Pythago-
ras's no-
tion of
transmigra-
tion.

14
Plato's doc-
trine of pre-
existence.

15
And mode
of proving

Resurrec-
tion.

This active mind, infus'd through all the space,
Unites and mingles with the mighty mass:
Hence men and beasts the breath of life obtain,
And birds of air, and monsters of the main;
The ethereal vigour is in all the same,
And every soul is fill'd with equal flame;
As much as earthy limbs, and gross alloy
Of mortal members, subject to decay,
Blunt not the beams of heav'n and edge of day (D). }

DRYDEN.

Besides this hypothesis, that in some measure was common to others, Plato had an argument peculiarly his own. Happening to peep into the region of metaphysics, he was somewhat surpris'd on observing the ideas which we derive from reflection and consciousness; and supposing that they could not have entered by the senses, he naturally, though not very justly, concluded, that we must have received them in some state of prior existence.

As, according to him, the soul was eternal, as well as the matter which compos'd the body, and as their union was only temporary and accidental, he might have been satisfied that the death of the soul was not to be the consequence of their separation. But, somehow or other, satisfied he was not. He had recourse to a new argument. As the soul, he said, was an active principle, and a self-moving, it did not depend for its life on another; and therefore would always continue to exist, though the body were reduced to the general mass out of which it was formed. See METAPHYSICS, Part III. chap. iv.

Whether Plato had borrowed any of his doctrines from the eastern magi, we pretend not to say. We only observe a striking similarity, in some respects, between his and theirs. In Plato's philosophy, the sun, moon, and stars, were animated beings, and a sort of divinities that originally had sprung from the great fountain of heat and light, and our earthly bodies a sort of dungeons in which our miserable souls are benighted and debas'd by desires, appetites, and passions. In the magian philosophy, the Supreme Being was called *Oromasdes*; was the god of light, or was light itself, and represented by Mithras, a subordinate divinity, and the same with the sun. Another deity of very great power was *Arimanes*, the god of darkness, who presided over matter, and was the origin of all evil (see POLYTHEISM).

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The ancient Gnostics, who derived their tenets from this source, believed, with Pythagoras and Plato, in a great number of subordinate genii; and said, that Demiurgus, the god of matter and the soul or spirit of this world, had contrived the bodies of men and brutes; and in the former particularly, as in so many prisons, had confin'd a number of celestial spirits, that by exposing them to the low desires of appetite and passion, he might seduce them from their allegiance to the God of light, and render them more submissive to himself. From these prisons the Supreme Being was continually making attempts to rescue them; and in the mean time was frequently sending divine messengers to enlighten and instruct them, and to render them capable of returning to the regions of light and happiness, to which they had belonged (E).

The Stoics attempted to simplify this system, which appears anciently to have pervaded Egypt and the east, and which would seem to be no more than variously modified by Orpheus, Pythagoras, Plato, and others of the more northerly and western nations. None of them allowed a creation out of nothing; and the shaping and modelling of matter into forms was variously explained, according as they happened to be most addicted to superstition, to morals, or to physics. Some ascribed these operations to ancient Time, Chaos, and Darkness, and explained the future changes in nature by the genealogies of these deities; some observing attraction and repulsion, or at least a sort of agreement and discordance among bodies, were inclined to ascribe them to Friendship and Hatred, or Love and Antipathy; some observing, that while one body rose another descended, made Levity and Gravity primary agents; and some taking notice that living bodies sprung from corruption, were disposed to confer the same powers on Moisture and Heat.

The physical hypotheses were what had most charms for the Stoics. From their system immaterial beings were openly excluded; all things were regulated by physical laws or inexorable fate; and all things originated in the *To 'Ev* or the *First One*, which was probably suggested by the *Monas* of Pythagoras. This *To 'Ev* appears to have been a *materia prima* devoid of all the qualities of body. In their language it was an *Αρχή* or *first principle*, not subject to change. When it was invested with the properties of body, it then became

R

a

(D) The general doctrine, as delivered here in these verses of Virgil, is the same with that not only of Pythagoras, but of the Stoics.

(E) Plato made the stars the native residence of inferior souls; and when these were thoroughly purified below, returned them home again: and therefore, says Virgil, alluding to his doctrine,

Some have taught
That bees have portions of ethereal thought,
Endu'd with particles of heav'nly fires;
For God the whole created mass inspires:
Thro' heav'n, and earth, and ocean's depth, he throws
His influence round, and kindles as he goes.
Hence flocks, and herds, and men, and beasts, and fowls,
With breath are quicken'd, and attract their souls:
Hence take the forms his prescience did ordain,
And into him at length resolve again.
No room is left for death, they mount the sky,
AND TO THEIR OWN CONGENIAL PLANETS FLY.

Dryden.

Resurrec-
tion.16
The opi-
nions of
the Gnos-
tics.17
Of the
Stoics.

Resurrec-
tion.

a στοιχείον or an *element*; and then, so far as respected its qualities, especially its forms, it was subject to changes almost perpetual. The gods themselves and the souls of men were in this system only modifications of matter (F). Man was composed of their four elements, Fire, Air, Water, and Earth; and upon dissolution, every part returned to the element from which it had come, as the water of a vessel swimming in the sea unites with the ocean when the vessel is broken. This system, it is plain, cannot possibly admit of any separate consciousness of existence (G). The same may be said of the systems of Democritus and Epicurus, and all those who undertook to explain things upon physical principles (H). The chief merit of the physical systems appears to be this: Absurd as they were, it would seem from the whimsical and the almost childish reasoning of Lucretius, that they had a tendency to lead mankind from extravagant hypotheses to something that was similar to observation.

18
Of Ari-
stotle.

What Aristotle thought of the separate existence of the soul after death is not very certain. The soul he calls an *ἐντελέχεια*; and if the reader can divine the meaning of the word, he perhaps can divine the meaning of the *Stagyrite*, and will then be a better diviner than we. At other times he says, that the soul is something divine; that it resembles the element of the stars; that it is something of a fiery nature; that it is the vicegerent of God in the body; and that the acuteness of the senses, the powers of the intellect, with the various kinds of appetites and passions, depend entirely on the qualities of the blood (I).

19
Of Critias
and others.

Another opinion of very old date was that of the late ingenious Mr Hunter. According to him, the living principle resides in the blood. This opinion, which is mentioned by Moses, was adopted by Critias and others of the ancients. Harvey likewise embraced it. But Mr Hunter, who always wished to be thought an original, inclines to stand at the head of the opinion, and supports it by experiments similar to those of the famed Taliacotius in mending noses. Should any of our readers wish to extract the soul's immortality from such an opinion, we must refer them to the many resources of ingenuity, sophistry, and logic.

20
Of the
Jews.

Among the Jews, the belief of a future and separate existence for a long time was deemed no essential article of their creed. Some thought that the soul was a spark

in the moving of the heart; some imagined that it was the breath, and that upon the dissolution of the body it naturally vanished into soft air. The Sadducees denied the existence of either angel or spirit. Many believed the doctrine of ghosts, and were accustomed to invoke them at the grave. It is hence that we hear the prophets complaining that they were seeking from the living God unto dead men. Some imagined that there was a pre-existence of souls; and, in the case of a blind man, asked our Saviour, whether the man or his parents had sinned that he was born blind? Others inclined to a revolution of soul and body, and thought that our Saviour was either Elias or one of the old prophets returned; and a great many new-modelled their opinion of the soul's immortality according to certain passages in Scripture. The inspired mother of Samuel had said, "The Lord killeth and maketh alive: he bringeth down to the grave, and bringeth up." Isaiah had exclaimed, "Thy dead shall live; together with my dead body shall they arise: Awake, and sing, ye that dwell in the dust; for thy dew is as the dew of herbs, and the earth shall cast out the dead." Daniel had declared, that many of them that sleep in the dust of the earth shall awake to everlasting life, and some to shame and everlasting contempt. In the vision of the valley of dry bones, Ezekiel had seen that "at the word of the Lord" the bones came together, bone to his bone, the sinews and the flesh came upon them, and the skin covered them above, and the breath came into the bodies, and they lived and stood upon their feet. And a passage of Job led them to suppose, that at some distant and future period a particular time, which was called *the last* or the *latter day*, was appointed by heaven for the general resurrection of all those who are sleeping in their graves. "I know (says Job) my Redeemer liveth, and that he shall stand at the latter day upon the earth; and though after my skin worms destroy this body, yet in my flesh shall I see God."

Whether these passages were fairly interpreted agreeably to their true and original meaning, it is not here our business to inquire. It is sufficient for us to observe, that from them many of the Jews inferred the reality of a general resurrection (K). In this persuasion, Martha, speaking of her brother Lazarus, says to our Lord, "I know that he shall rise again in the resurrection at the last day." This resurrection appears to

(F) The *ἄρχη* of the Stoics appears to be the same with the *Li* of the Chinese.

(G) Yet without regarding the inconsistency, many of the Stoics believed, that the soul continued separate long after death; though all in general seemed to deny a future state of rewards and punishments.

(H) In his *Physical Cosmogony*, Plato differed but little from the Stoics; but he had another sort of cosmogony, in which all things appear to have sprung from, and to be almost wholly composed of, metaphysical entities, as ideas of forms, numbers, and mathematical figures. These kinds of notions were common both to him and Pythagoras; and were originally borrowed from Egypt, where calculation and geometry were half deified. See PLATONISM.

(I) The immortal Harvey has collected these different opinions of the *Stagyrite* in Exercit. 52. *De Generatione Animalium*.

(K) At present some are for allowing only those of their own nation to share in the benefits of this resurrection; and some are not even for allowing them, except they be men of piety and virtue. To render this resurrection probable, the rabbins say, with some of the Mahometans, that there is a certain bone in the body which resists putrefaction, and serves as a seed for the next body*. What that bone is, is of no great moment, * See *Phar.* as any bone, we believe, in the skeleton will answer the purpose equally well. With respect to the manner of *ris.* this resurrection, the learned Hody has quoted several opinions of the Jews, and, among others, that of the Chal-dee.

Resurrec-
tion.

to have been a general opinion among the Pharisees; for although it was a notion of the sect of the Sadducees that there was no resurrection, neither angel nor spirit, yet the Pharisees, we are told, confessed both. And this assertion is plainly confirmed by St Paul himself when his countrymen accused him before Felix, "I confess unto thee (says this eminent apostle), that after the way which they call heresy so worship I the God of my fathers, believing all things which are written in the law and in the prophets, and having hope toward God, which they themselves also allow, that there shall be a resurrection of the dead, both of the just and unjust."

21
Of the
Christians.

This resurrection of the dead to judgment, though not perhaps in the same sense in which the old Pharisees conceived it, is now generally and almost universally (L) maintained by Christians (M). Yet the Christians differ considerably with respect to the nature of the human soul. Some imagine, that this spirit is naturally mortal, and that it is propagated along with the body from the loins of the parent. In support of this opinion, it has been observed that a great number of insects and plants transfer their lives to their posterity, and die soon after the act of propagation; that after this act the vital principle is in the most vigorous of plants and animals always found to be much exhausted; and that Tertullian a father of the church, in attempting some experiments of the kind, became subject to a momentary blindness, and felt a portion of his soul going out of him (N).

These imagine that immortality was only conditionally promised to man; that Adam forfeited this immortality by his disobedience; and that Christ has restored us to the hopes of it again by his sufferings and death: for as in Adam we have all died, so in Christ, they say, we shall all be made alive; and that now the sting is taken from death, and the victory over our souls from the grave.

Others have conceived the human soul as naturally immortal, and as setting death and the grave at defiance. Adam, they say, died only in a figure; and only from the consequences of this figure, which means

sin, has our Lord saved us. In this sense Adam died on the very day in which he had sinned; or he died literally in 1000 years, which with the Lord are as one day. To these arguments their opponents reply, What then is the victory over death and the grave? You must still have recourse to a new figure, and betake yourselves to the second death; though, after all, where is your grave? To this it is answered, that the soul of itself is naturally immortal, and that it depends not either for its existence or the exercise of its faculties upon the body; that the properties of matter, as figure, magnitude, and motion, can produce nothing that is like to perception, memory, and consciousness. This is true, rejoin their opponents; but besides these few properties of matter, which are only the objects of that philosophy which has lately and properly been termed *mechanical*, the chemical philosophy has discovered other properties of matter; has found that matter is of various kinds; that it very often does not act mechanically; that it acquires many new properties by combination; and that no man, till farther experiment and observation, should venture to assert how far the soul is or is not dependent on its present organised system. The others, proceeding on their hypothesis, maintain that the soul, as being immaterial, is not divisible; and though the body of a frog may live without the head for a whole day; though the body of a tortoise may live without the head for a whole month; though a human limb may for some minutes after amputation continue to perform a vital motion, independent of a brain, a stomach, or a heart; and though the parts of a plant, a polype, or a worm, may survive their separation and become living wholes*, yet the soul, they observe, is not to be compared with the vital principles of plants and animals, nor ought to be divided on reasons so slender as those of analogy. Even granting, they say, that the soul were not naturally immortal of itself; yet the justice of God, which is not remarkable for its equal distribution of rewards and punishments in the present world, is bound to make some amends in the next. And to this again their opponents answer, as to the equal distribution of justice in a future world, of that we are assured on much bet-

Resurrec-
tion.* See Poly-
pus and Re-
production.

R 2

ter

see paraphrast of the Canticles, asserting that the prophet Solomon had said, "When the dead shall revive, it shall come to pass that the Mount of Olives shall be cleft, and all the dead of Israel shall come out from thence; and the just too that died in captivity shall come through the way of the caverns under the earth, and shall come forth out of the Mount of Olives." He has likewise quoted Saunderson's Voyage to the Holy Land, in which, we are told that many of the Jews, by their own account, are to rise up in the valley of Jehosaphet; and that in the *rowing* or *devolution* of the caverns, those at a distance must scrape their way thither with their nails.

(L) The sect of the Quakers explain it figuratively.

(M) The last quoted author* (*Resurrection of the same Body, asserted from the traditions of the Heathens, the ancient Jews, and the primitive Church*) has endeavoured to show that this doctrine, in the same sense as we understand it, has been asserted by the ancient magi, and by the present heathen gauris of Persia, the relics of the ancient magi; by some of the ancient Arabians; by some of the banians of India; by the present inhabitants of the island of Ceylon, of Java, of Pegu, of Transiana; by some amongst the Chinese; by the Arderians in Guinea; and by the ancient Prussians. The proofs which he brings, it must be confessed, are not however always very satisfactory. It appears, even from his own account, that some of these had derived their notions from certain Christians, Mahometans, or Jews. But the reader may judge of the great accuracy of his ideas from his bringing old Pythagoras and the Stoics, and even Democritus and Epicurus, in support of the same or a similar opinion.

(N) In illo ipso voluptatis ultimæ æstu quo genitale virus expellitur, nonne aliquid de anima quoque sentimus exire, atque adeo marcescimus et devigescimus cum lucis detrimento.

Resurrec-
tion.

ter grounds than any of your's : our Lord has declared it in exprefs terms ; and whether the foul be immortal or not, we can easily believe what he faid is true, as we know him whom we have trusted.

These, with Plato, suppose, that the soul is here as in prison ; though how or at what time it should first have come into this dungeon they have not determined. They have only agreed, that upon its enlargement all its faculties are to receive an increase of power ; and " having already equipped it so exquisitely with consciousness, activity, and perception in and of itself, and put it into so complete a capacity for happiness and misery in a separate state," their hypothesis does not require them to admit the least occasion for a resurrection ; which accordingly is said to have been an article of Baxter's creed (o).

A third opinion, which extends likewise to every species of plant and animal, is, that all souls were created at once with bodies of ether ; that these bodies, occupying only a very small space, were packed up in their first progenitors, and there left to be afterwards evolved and clothed with matter of a grosser kind by acts of generation and consequent nutrition. For the proof of this theory we are referred to the small animals seen through the microscope, and likewise to those which are supposed to escape even microscopic observation ; but, above all, to the eggs of insects, which, though scarcely perceptible, yet contain in embryo a future caterpillar and all its coats, and within these a future butterfly with its legs and wings. These philosophers can perhaps account for the general taint of original sin in some other way than has hitherto been done. We have only to add, that on their scheme the resurrection is not a matter that seems to be indifferent.

22
Place of
the dead
near to the
grave.

The next thing that falls to be considered is the place of the dead. From a natural enough association of ideas, an opinion had very early prevailed, that the spirit continued near to the body ; and the offerings therefore intended for the dead were by most nations presented at the grave ; and that on which the departed spirit is supposed to rest is always placed near the grave in China.

23
In dark-
ness.

From the dreams of the night and the natural tendency of the fancy to work and to summon up spectres when the world around us is involved in darkness, it has also been imagined, that these spirits delight in the night and shadow of death (p), or have been prohibited from enjoying the exhilarating beams of day. And hence we are told,

That in the dismal regions of the dead
Th' infernal king once rais'd his horrid head ;
Leap'd from his throne, lest Neptune's arm should lay
His dark dominions open to the day,
And pour in light.

The nations, therefore, who have fancied a general receptacle for the dead, have thus been induced to

place it in the west (q), where the night begins and the day ends. That part of the world which, in the division of his father's dominions, fell to Pluto the infernal god, and where, according to Lactantius, Satan holds the empire of darkness, the Friendly Islanders have placed to the westward of a certain island which they call *Tejee* ; some tribes of American Indians, in a country beyond the western mountains ; and Homer, somewhere to the westward of Greece at the boundaries of the ocean,

Resurrec-
tion.

24

Where in a lonely land and gloomy cells
The dusky nation of Cimmeria dwells ;
The sun ne'er views th' uncomfortable seats
When radiant he advances nor retreats.
Unhappy race ! whom endless night invades,
Clouds the dull air, and wraps them round in shades.

25

Another opinion entertained by the Greeks and some other nations was, that the place of departed spirits is under the earth. This opinion is frequently mentioned in Homer, in Virgil, and alluded to by the Jewish prophets. As for the prophets, we know the circumstance from which they borrowed it : it was borrowed from those subterraneous vaults where their chiefs were buried, and which have been described by modern travellers. In the sides of these caverns there is ranged a great number of cells ; and in these cells the mighty lay in a sort of state, with their weapons of war and their swords at their head. To these kinds of Egyptian cemeteries Ezekiel alludes, when he says, " that they shall not lie with the mighty that are fallen of the uncircumcised, who are gone down to hell with their weapons of war, and they have laid their swords under their head." And Isaiah, when thus speaking of the prince of Babylon, " Thou shalt be brought down to hell, to the sides of the pit. Hell from beneath is moved for thee, to meet thee at thy coming ; it stirreth up the dead for thee, even all the chief ones of the earth ; it hath raised up from their thrones all the kings of the nations. All the kings of the nations, even all of them, lie in glory, every one in his own house."

Under the
earth.

Many of the ancient fathers of the church asserted only, that the dead are now in *abditis receptaculis*, or in certain hidden and concealed places.

26

Orpheus, Origen, and some others of the fathers, with the ancient Caledonian bard Ossian, and the learned Dodwell among the moderns, imagined that the soul, when it left the body, went into the air, and resided somewhere between the surface of the earth and the moon.

27

Those who believed in a transmigration caused the soul at death only to enter a new body, and kept the departed always with the living. This creed has been found in India, in Egypt, in Mexico, and in all those countries where picture-writing has been much used. In this species of writing, the same picture is on fancied analogy transferred by metaphor to signify either

28

(o) *An Historical View of the Controversy concerning an Intermediate State, and the Separate Existence of the Soul.*
(p) Some Turkish ghosts are an exception, who use lamps or candles in their tombs, when their friends choose to supply them with these luxuries.

(q) The *west* and *darkness* are synonymous in Homer. Ω φίλοι, ἢ γὰρ τ' ἰδμεν ὅπῃ ζῶσος, οὐδ' ὅπῃ ἡώς. (*Odys.* " O my friends ! which is the west, or which is the east, the place of darkness, or that of the morning, we cannot learn."

Resurrec-
tion.

ther a god or a man, a brute or a plant; and in those countries where it was practised, men had usually their names from animals, and were represented by their figure in writing (R). From this last stage of the process, a transmigration was easily supposed: and hence we hear of the gods of Egypt wandering about like so many vagrants in brute shapes, and of princes being translated into stars, because a star was their emblem in hieroglyphic, or stood for their name in figurative language. And, in like manner, we see, from the specimen of this character which is still preserved on celestial globes, how the heavens at first came to be filled with bears, scorpions, and dragons, and with a variety of other animals.

29
State of the
dead ac-
cording to
some rude
nations.

The opinions concerning the state of the dead are still more numerous than those concerning the place where they reside. Rude nations have generally thought that the future state is similar to the present; that plants, animals, and inanimate things there, have their shades; and that these contribute as much to the pleasures and conveniences of the dead as their realities do to the living; that husbands have their wives (s), lovers their mistresses, warriors their battles, huntsmen their sport; and that all their passions, amusements, and business, are the same as formerly. For this reason, that the dead may not appear unprovided in the next world, like the ancient Gauls, some tribes of India, America, and Africa, bury with them in the same grave their wives, their arms, their favourite animals, and their necessary utensils.

30
According
to the E-
gyptians.

The ancient Egyptians, who believed in transmigration, supposed that the soul was after death obliged to animate every species of bird and quadruped, of reptile and insect, and was not to return to a human form till after a period of 3500 years. Others have confined their transmigrations to particular animals, as the soul of man to the human form, and the soul of the brute to the bodies of the species to which it belonged. Some have changed the brute into man, and man into the brute, that man might suffer injuries similar to what he had inflicted, and the brute retaliate what he had suffered. Others have confined the human soul in plants and in stones; and Bell of Antermony mentions an Indian who supposed that his ancestors might be in fishes.

31
According
to Homer.

The notions of Homer were probably those of many of his time. But these notions were dismal indeed. When his hero Ulysses visited the shades, many of the ghosts seemed to retain the mangled and ghastly appearance

which they had at death; and, what is worse, seemed to be all starving with hunger, innumerable multitudes, with loud shrieks, flocking to the steams of his slain victim as to a most sumptuous and delicious banquet.

Resurrec-
tion.

For scarcely had the purple torrent flow'd,
And all the caverns smok'd with streaming blood,
When, lo! appear'd along the dusky coasts
Thin airy shoals of visionary ghosts;
Fair penive youths, and soft enamour'd maids,
And wither'd elders, pale and wrinkl'd shades.
Ghastly with wounds, the forms of warriors slain,
Stalk'd with majestic port, a martial train.
These, and a thousand more, swarm'd o'er the ground,
And all the dire assembly shriek'd around.
Ulysses saw, as ghost by ghost arose,
All wailing with unutterable woes.

Alone, apart, in discontented mood,
A gloomy shade, the fullen Ajax stood;
For ever sad, with proud disdain, he pin'd,
And the lost arms for ever stung his mind.

Upon Ulysses saying to Achilles,
Alive, we hail'd thee with our guardian gods;
And, dead, thou rul'st a king in these abodes;

The shade reply'd:
Talk not of ruling in this dol'rous gloom,
Nor think vain words (he cry'd) can ease my doom;
Rather I choose laboriously to bear
A weight of woes, and breathe the vital air,
A SLAVE TO SOME POOR HIND THAT TOILS FOR BREAD,
THAN LIVE A SCEPTER'D MONARCH OF THE DEAD.

In this gloomy region no one is rewarded for his virtue, nor is punished for his crimes, unless committed, like those of Sisyphus, Tantalus, and Ixion, against the gods. All indeed are classed into groups, from a certain analogy of age, sex, fate, and disposition; but all appear to be equally unhappy, having their whole heart and affections concentrated in a world to which they are fated never to return.

The Elysium of Homer is allotted only for the relations and descendants of the gods; and Menelaus goes to this country of perpetual spring (r), not as a person of superior merit, but because he had married the daughter of Jove.

Even long after a future state had become the scene of rewards and punishments, these for the most part were distributed, not according to moral, but physical distinctions. With the Greeks and Romans, the soul was condemned to many calamities for a number of years, ³² Becomes a place of re-wards and punish-ments.

(R) A military gentleman who resided at Penobscot during the late American war, assured us that the Indians, when desired to subscribe a written agreement, drew always the picture of the object or animal whose name they bore. But for fuller information on this subject, see Clavigero's Hist. of Mexico.

(s) The question which the Sadducees put to our Saviour about the wife of the seven brothers, is a proof that the Pharisees thought there was marriage and giving in marriage in the future state, and that it was somewhat similar to the present.

(r) Homer sends the ghost of Hercules to the shades, while Hercules himself is quaffing nectar with Hebe in the skies. One soul of the hero is therefore repining with the ghosts of mortals in the regions below, while the other is enjoying all the happiness of the gods above. (See ODYSSEY, B. II. near the end). Philosophers since have improved on this hint of the poet; and men have now got rational, animal, and vegetable souls, to which sometimes a fourth one is added, as properly belonging to matter in general. Homer insinuates, that Menelaus was to be translated to Elysium without tasting death. This Elysium is the habitation of men, and not of ghosts, and is described as being similar to the seat of the gods. Compare *Odyss.* iv. l. 563. and *Odyss.* vi. l. 43. in the Greek.

Resurrec-
tion.33
These at
first distri-
buted ac-
cording to
physical
distinc-
tions;*Clavigero's
Hist. of
Mexico,
vol. vi.
p. 136.
34
And after-
wards ac-
cording to
moral di-
stinctions.*Or para-
dise of fools.35
Virgil's
purgatory.

years, if the body was not honoured with funeral rites. Among the Scandinavians, a natural death was attended with infamy, while a violent death, particularly in battle, gave a title to sit in the halls of Odin, and to quaff beer from the skulls of enemies. Among the Tlascalans, it was only the great that were permitted to animate birds and the nobler quadrupeds; the lower ranks were transformed into weasels, into poultry beetles, and such mean animals. Among the Mexicans, those who were drowned, who died of a dropsy, tumours, or wounds, or such like diseases, went along with the children that had been sacrificed to the god of water, and in a cool and delightful place were allowed to indulge in delicious repasts and varieties of pleasures: those who died of other diseases, were sent to the north or centre of the earth, and were under the dominion of the gods of darkness. "The soldiers who died in battle, or in captivity among their enemies, and the women who died in labour, went to the house of the sun, who was considered as the prince of glory. In his mansions they led a life of endless delight. Every day the soldiers, on the first appearance of his rays, hailed his birth with rejoicings and with dancings, and the music of instruments and voices. At his meridian they met with the women, and in like festivity accompanied him to his setting. After four years of this glorious life, they went to animate clouds, and birds of beautiful feathers and of sweet song; but always at liberty to rise again, if they pleased, to heaven, or descend to the earth, to warble their songs, and to suck flowers*."

These sentiments of a future state, conceived in a savage and a rude period, could not long prevail among an enlightened and civilized people. When the times of rapine and violence therefore began to cease; when societies regulated by certain laws began to be established; when martial prowess was less requisite, and the qualities of the heart had begun to give an importance to the character, the future state was also modelled on a different plan. In the *Æneid* of Virgil, an author of a highly cultivated mind, and of polished manners, it becomes a place of the most impartial and unerring justice; every one now receives a sentence suited to the actions of his past life, and a god is made to preside in judgment;

Who hears and judges each committed crime,
Inquires into the manner, place, and time.
The conscious wretch must all his acts reveal,
Loth to confess, unable to conceal,
From the first moment of his vital breath,
To the last hour of unrepenting death.

The spirits of the dead no longer mingle together as in the less enlightened period of Homer; the vicious are dismissed to a place of torments, the virtuous sent to regions of bliss: indifferent characters are confined to a limbus*; and those who are too virtuous for hell, but too much polluted with the stains of vice to enter heaven without preparation, are for some time detained in a purgatory.

For there are various penances enjoin'd,
And some are hung to bleach upon the wind;
Some plung'd in waters, others purg'd in fires,
Till all the dregs are drain'd, and rust expires;
Till nothing's left of their habitual stains,
But the pure ether of the soul remains.

When thus purified, they become fitted to receive the rewards of their past virtues, and now enter into those regions of happiness and joy.

With ether vested, and a purple sky,
The blissful seats of happy souls below,
Stars of their own, and their own suns they know;
Where patriots live, who, for their country's good,
In fighting fields were prodigal of blood.
Priests of unblemish'd lives here make abode,
And poets worthy their inspiring god;
And searching wits, of more mechanic parts,
Who grac'd their age with new-invented arts:
Those who to worth their bounty did extend;
And those who knew that bounty to commend.

These good men are engaged in various amusements, according to the taste and genius of each. Orpheus is still playing on his harp, and the warriors are still delighted with their chariots, their horses, and their arms. The place of torment is at some distance.

A gaping gulph, which to the centre lies,
And twice as deep as earth is distant from the skies;
From hence are heard the groans of ghosts, the pains
Of sounding lashes, and of dragging chains.
Here, those who brother's better claim disown,
Expel their parents, and usurp the throne;
Defraud their clients, and, to lucre sold,
Sit brooding on unprofitable gold.
Who dare not give, and even refuse to lend,
To their poor kindred, or a wanting friend.
Vast is the throng of these; nor less the train
Of lustful youths for foul adult'ry slain.
Hosts of deserters, who their honour sold,
And basely broke their faith for bribes of gold:
All these within the dungeon's depth remain,
Despairing pardon, and expecting pain.

The souls of babes, of unhappy lovers, and some others, seem to be placed in a paradise of fools residing in a quarter distinct from Elyian Tartarus and Purgatory.

It is curious to observe, how much these ideas of a future state differ from the vague and simple conjectures of rude nations; and yet from their simple and rude conjectures, we can easily trace the successive changes in the writings of Homer, Plato, and Virgil; and may easily show, that those laws which different nations have prescribed for their dead, have always borne the strongest analogy to their state of improvement, their system of opinions, and their moral attainments. Some nations, as those of India, have fancied a number of heavens and hells, corresponding to some of their principal shades in virtue and vice; and have filled each of these places respectively with all the scenes of happiness and misery, which friendship and hatred, admiration, contempt, or rancour, could suggest. But having already observed the progress of the human mind in forming the grand and leading ideas of a future state, we mean not to descend to the modifications which may have occurred to particular nations, sects, or individuals.

The belief of Christians respecting futurity demands our attention, as being founded on a different principle, namely, on express revelations from heaven. From many express declarations in Scripture, all Christians seem to be agreed, that there is a heaven appointed for the

Resurrec-
tion.36
His hea-
ven.37
His hell.38
His para-
dise of
fools.

39

The state
of the dead
as revealed
in Scrip-
ture.

the

Resurrec-
tion.40
The nature
of heaven.41
Of hell.42
Of the mid-
dle state,
and differ-
ent opi-
nions about
it.43
According
to some a
state of
sleep;

the good and a hell for the wicked. In this heaven the saints dwell in the presence of God and the uninterrupted splendors of day. Those who have been wise shine as the firmament, and those who have converted many to righteousness as the stars. Their bodies are glorious, immortal, incorruptible, not subject to disease, to pain, or to death. Their minds are strangers to sorrow, to crying, to disappointment; all their desires are presently satisfied; while they are calling, they are answered; while they are speaking, they are heard. Their mental faculties are also enlarged; they no more see things obscurely, and as through a cloud, but continually beholding new wonders and beauties in creation, are constantly exclaiming, "Holy, holy, holy! is the Lord of Hosts, worthy is he to receive glory, and honour, and thanksgiving; and to him be ascribed wisdom, and power, and might; for great and marvellous are his works, and the whole universe is filled with his glory."

Their notions of hell differ considerably. Some understanding the Scriptures literally, have plunged the wicked into an abyss without any bottom; have made this gulph darker than night; have filled it with rancorous and malignant spirits, that are worse than furies; and have described it as full of sulphur, burning for ever. This frightful gulph has by some been placed in the bowels of the earth; by some in the sun; by some in the moon; and by some in a comet: but as the Scriptures have determined nothing on the subject, all such conjectures are idle and groundless.

Others imagine, that the fire and sulphur are here to be taken in a figurative sense. These suppose the torments of hell to be troubles of mind and remorse of conscience; and support their opinion by observing, that matter cannot act upon spirit; forgetting, perhaps, that at the resurrection the spirit is to be clothed with a body, and, at any rate, that it is not for man vainly to prescribe bounds to Omnipotence.

What seems to have tortured the genius of divines much more than heaven or hell, is a middle state. On this subject there being little revealed in Scripture, many have thought it incumbent upon them to supply the defect; which they seem to have done in different ways. From the Scriptures speaking frequently of the dead as sleeping in their graves, those who imagine that the powers of the mind are dependent on the body, suppose that they sleep till the resurrection, when they are to be awakened by the trump of God, reunited to their bodies, have their faculties restored, and their sentence awarded.

This opinion they support by what St Peter says in the Acts, that David is not ascended into heaven; and that this patriarch could not possibly be speaking of himself when he said, "Thou wilt not leave my soul in hell, i. e. the place of the dead." They observe, too, that the victory of Christ over death and the grave seems to imply, that our souls are subject to their power; that accordingly the Scripture speaks frequently of the soul's drawing near to, of its being redeemed from, and of its descending into, the grave; that the Psalmist, however, declares plainly, that when the breath of man goeth forth, he returneth to his earth, and that very day his thoughts perish. And should any one choose to consult Ecclesiastes, he will find, that the living know that they shall die, but that the dead know not any thing: that their love, and their hatred, and their envy, are perished; and that there is no work, nor device, nor

wisdom, nor knowledge, in the grave, whether they are gone.

Those who believe that the soul is not for the exercise of its faculties dependent on the body, are upon its separation at death obliged to dispose of it some other way. In establishing their theory, they usually begin with attempting to prove, from Scripture or tradition, both its active and separate existence; but with proofs from tradition we intend not to meddle. Their arguments from Scripture being of more value, deserve our serious consideration; and are nearly as follow.

Abraham, they say, Isaac, and Jacob, are still living, because Jehovah is their God, and he, it is allowed, is not the God of the dead, but of the living. But their opponents reply, That this is the argument which our Saviour brought from the writings of Moses to prove a future resurrection of the dead; and that any person who looks into the context, will see it was not meant of a middle state. From the dead living unto God, our Saviour infers nothing more than that they shall live at the resurrection; and that these gentlemen would do well in future to make a distinction between simply living and living unto God: For though Abraham, Isaac, and Jacob, be living unto God, our Saviour has assured us that Abraham is dead, and the prophets dead.

A second argument is that glimpse which St Paul had of paradise about 14 years before he had written his Second Epistle to the Corinthians. To this argument their opponents reply, That as St Paul could not tell whether, on that occasion, he was out of the body or in the body, it is more than probable that the whole was a vision; and, at any rate, it is no proof of a separate existence.

A third argument is, St Paul's wishing to be absent from the body, and present with the Lord. But, say their opponents, St Paul desired not to be unclothed, but to be clothed upon: and as some of those who maintain a separate existence, bring Scripture to prove that the body continues united to Christ till the resurrection; in that case, St Paul, if he wished to be present with the Lord, should have rather remained with his body than left it.

A fourth argument is, the appearance of Moses and Elias upon the mount of transfiguration. To which their opponents reply, that these saints appeared in their bodies; that Elias was never divested of his body; and that the account which we have of the burial of Moses, has led some of the ablest critics and soundest divines to conclude, that he was likewise translated to heaven without tasting death. At any rate, say they, he might have been raised from the dead for the very purpose of being present at the transfiguration, as the bodies of other saints certainly were, to bear testimony to our Lord's resurrection and victory over the grave.

A fifth argument is, what our Saviour said to the thief, "Verily I say unto thee, to-day thou shalt be with me in paradise." The objection usually made here is, that the expression is evidently ambiguous, and that the sense depends entirely on the punctuation: for if the point be placed after *to-day*, the meaning will be "Verily, even now, I tell thee, thou shalt be with me in paradise." But the import of paradise in this place, say the opponents, is likewise doubtful. We learn from St Peter's explanation of the 16th Psalm, that our Sa-
viour's

Resurrec-
tion.

44

According
to others, a
state of
conscious
existence.|| Shorter
Catechism

Resurrec-
tion.

viour's soul was not to be left in hell; and we know that on the day of his crucifixion he went not to heaven: for after he had risen from the place of the dead, he forbade one of the women to touch him, as he had not yet ascended to the Father. Hell, therefore, and paradise, continue they, seem to be in this passage the very same thing, the place of the dead; and our Saviour's intention, they add, was not to go to heaven at that time, but to show his victory over death and the grave, to whose power all mankind had become subject by the disobedience of their first parents.

45
The soul is
by some
supposed to
reside in
the air till
the resur-
rection.

Without pretending to enter into the merits of this dispute, the ingenious Burnet, in his Theory of the Earth, endeavours to prove, upon the authority of the ancient fathers, that paradise lies between the earth and the moon; and the learned Dodwell, on the same authority, has made it the common receptacle of souls till the resurrection; but has not told us whether or not they are to be accountable for the actions of this separate existence at the latter day, or are only to be judged according to the deeds that were done in their bodies.

46
The church
of Rome
supposes a
purgatory.

This notion of a common receptacle has displeased many. The state of purgation, obscurely hinted in the doctrines of Pythagoras, and openly avowed by Plato and Virgil, has been adopted by the Romish divines, who support their opinion on certain obscure passages of scripture, which are always of a yielding and a waxen nature, may easily be twisted to any hypothesis, and like general lovers espouse rather from interest than merit.

47
Others sup-
pose that
the soul af-
ter death
enters a
state of re-
wards and
punish-
ments in a
certain
degree.

It has displeased others, because they are anxious that the righteous should have a fore-taste of their joys, and the wicked of their torments, immediately after death, which they infer to be certainly the case from the parable of the rich man and Lazarus (u). But to this it is objected, that the rich man is supposed to be in hell, the place of torments, and that this punishment ought not to take place on their own hypothesis till after the sentence at the resurrection.

Another argument used for the intermediate state is the vision of St John in the Apocalypse. In this vision the Evangelist saw under the altar the souls of those that were slain for the word of God and for the testimony which they held. Their opponents doubt whether these visible souls were immaterial, as St John heard them cry with a loud voice, and saw white robes given unto every one of them. If they had bodies, that circumstance might chance to prove a resurrection immediately after death, and so supersede the general resurrection at the last day.

While such conclusions as are here drawn from the parable and vision, say the opposers of an intermediate conscious existence, imply that the dead are already raised, and are now receiving the respective rewards of their virtues and their crimes; those who maintain an intermediate separate existence, who speak of the body as a prison, and of the soul as receiving an increase of power when freed from the body, are certainly not more than consistent with themselves, when they think that this soul would derive an advantage from its after union with either a new system of matter or the old one, however much altered. Baxter, they say, who saw the in-

consistency, was disposed to reason somewhat like *M. Resurrec-
tion.*

O, Father! can it be that souls sublime
Return to visit our terrestrial clime?
Or that the gen'rous mind, releas'd at death,
Should covet lazy limbs and mortal breath?

In no one instance, they continue, have Christians perhaps more apparently than in this argument wrested the scriptures to their own hurt: by thus rashly attempting to accommodate the sacred doctrines of religion to a preconceived philosophical hypothesis, they have laid themselves open to the ridicule of deists, and have been obliged, for the sake of consistency, either to deny or to speak slightly of the resurrection; which is certainly the surest foundation of their hope, seeing St Paul hath assured us, that if there be no resurrection of the dead, then they which are fallen asleep in Christ are perished, and those who survive may eat and drink, and act as they please, for to-morrow they die; and die, too, never to live again.

Though this reproof may be rather severe, we are sorry to observe that there seems to have been sometimes too much reason for it. A certain divine†, whose piety was eminent, and whose memory we respect, having written "An Essay toward the proof of a separate State of Souls between Death and the Resurrection, and the Commencement of the Rewards of Virtue and Vice immediately after death," has taken this motto, "Because sentence against an evil work is not executed speedily, therefore the heart of the sons of men is fully set in them to do evil." "The doctrine, he says, of the resurrection of the body and the consequent states of heaven and of hell, is a guard and motive of divine force, but it is renounced by the enemies of our holy Christianity; and should we give up the recompenses of separate souls, while the deist denies the resurrection of the body, I fear, between both we should sadly enfeeble and expose the cause of virtue, and leave it too naked and defenceless."

This author, who wishes much that the punishment of crimes should follow immediately after death, is of opinion, that if heaven intended to check vice and impiety in the world, it has acted unwisely, if it really has deferred the punishment of the wicked to so late a period as the resurrection. "For such, he observes, is the weakness and folly of our natures, that men will not be so much influenced and alarmed by distant prospects, nor so solicitous to prepare for an event which they suppose to be so very far off, as they would for the same event if it commences as soon as ever this mortal life expires. The vicious man will indulge his sensualities, and lie down to sleep in death with this comfort, I shall take my rest here for 100 or 1000 years, and perhaps in all that space my offences may be forgotten; or let the worst come that can come, I shall have a long sweet nap before my sorrows begin: and thus the force of divine terrors is greatly enervated by this delay of punishment."

Thus far our author, who thinks that his hypothesis, if not true, is at least expedient, and that from motives of expediency it ought to be inculcated as a doctrine

(u) Whitby shows that this parable was conformable to the notions of the Jews at that time; and even the Mahometans, who believe in the resurrection of the dead, suppose likewise a state of rewards and punishments in the grave.

Resurrec-
tion.

trine of Scripture; but how far his reasons can be here justified we mean not to determine; we shall leave that to be settled by others, reminding them only that the distance of future rewards and punishments is not greater on the supposition of the sleep of the soul than on the contrary hypothesis. Every man who has but dipt into the science of metaphysics knows, and no man ever knew better than he who is believed to have been the author of the work before us, that time unperceived passes away as in an instant; and that if the soul be in a state void of consciousness between death and the resurrection, the man who has lain in his grave 1000 years will appear to himself to have died in one moment and been raised in the next. We would likewise recommend to those who may henceforth be inclined to inculcate any thing as a doctrine of Scripture merely on account of its supposed expediency, always to remember that God is above, that they are below, that he is omniscient, that they are of yesterday and know little, that their words therefore should be wary and few, and that they should always speak with respect of whatever concerns the Sovereign of the universe, or relates to his government either in the natural or moral world. For wilt thou, says the Highest, disannul my judgement? Wilt thou condemn me that thou mayest be righteous? shall he that contendeth with the Almighty instruct him? He that reproveth God let him answer it.

If, in stating these opposite opinions, we may seem to have favoured what has been called the sleep of the soul, it is not from any conviction of its truth, for there are particular texts of Scripture which appear to us to militate against it. We are satisfied, however, that it is a very harmless opinion, neither injurious to the rest of the articles of the Christian faith nor to virtuous practice; and that those who have poured forth torrents of obloquy upon such as may have held it in simplicity and godly sincerity, have either mistaken the doctrine which they condemned, or been possessed by a spirit less mild than that of the gospel (x).

48
The resur-
rection re-
peatedly as-
serted in
Scripture.

Whatever be the fate of the middle state, the resurrection stands on a different basis. It is repeatedly asserted in Scripture; and those grounds on which we believe it are authenticated facts, which the affectation, the ingenuity, and the hatred of sceptics, have numberless times attempted in vain to disprove. These facts we are now to consider, referring our readers for the character of the witnesses, the authenticity of the gospel-history, and the possibility of miracles, to the parts of this work where these subjects are treated (See MIRACLE, METAPHYSICS, Part I. Chap. vii. and RELIGION); or, should more particular information be required, to the writings of Ditton, Sherlock, and West.

Our Lord, after proving his divine mission by the miracles which he wrought, and by the completion of ancient predictions in which he was described, declared

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that the doctrine of a resurrection was one of those truths which he came to announce. To show that such an event was possible, he restored to life the daughter of Jairus, a ruler of the synagogue, a young man of Nain, who was carried out on his bier to be buried, and his friend Lazarus, whose body at the time was thought to have become the prey of corruption. Though the two first of these miracles were wrought in the presence of a number of witnesses, yet the last, owing to particular circumstances, produced a much greater noise among the Jews. It was performed on a person seemingly of some note, in the village of Bethany, not far from Jerusalem, and in the presence of a great many persons who from the metropolis had come to condole with Mary and Martha. No doubts were entertained of the reality of Lazarus's death. Our Lord was at a distance when he expired, and his body had already been lying for some days in the grave. When he came forth at the voice of our Lord, all were astonished. Those from Jerusalem, on returning home, are impatient to relate what they had seen; those who heard of so memorable an event cannot conceal it; the report reaches the ears of the Pharisees and chief priests. They are soon made acquainted with every circumstance; and dreading the issue, they think it necessary to call a council upon the occasion, and concert the measures that ought to be pursued in a matter which was likely to be attended with so many and important consequences. In this council, it seemed to be agreed that our Lord had performed, and was still continuing to perform, many miracles: That this last miracle, as being of an extraordinary kind, would make many converts; and that if measures were not speedily taken to prevent these uncommon displays of his power, all would believe on him: the jealousy of the Romans would be excited, the rulers deposed, and the nation of the Jews deprived of its few remaining privileges. Yet, notwithstanding these private concessions made in the council, the members who dreaded to let their sentiments be known to the people, affect in public to treat our Saviour as an impostor. But he who already had demonstrated the absurdity of their opinion, who supposed that his miracles were wrought by Beelzebub prince of the devils, is again ready to confute the ridiculous assertion of those who pretended to say that they were a deception. His friend Lazarus was still living at the distance of only a few miles, and many of the Jews who had gone to see him were ready to attest the truth of the report. If the rulers, apprehending the consequences of the truth, be afraid to know it, and if they are unwilling to go to Bethany, or to send for Lazarus and those who were present at his resurrection, our Lord gives them a fair opportunity of detecting his fraud, if there was any such to be found in him. To preserve their power, and remove the jealous suspicion of the Romans, it had been already determined in council to put him to death; and

Resurrec-
tion.49
The possi-
bility of it
shown by
our Sa-
viour's rai-
sing several
persons
from the
dead;

S

our

(x) Perhaps no man has been more culpable in this respect than the celebrated Warburton, who seems at first to have himself denied an intermediate state of conscious existence. He afterwards imagined that such a state is supposed, though not expressly asserted, in Scripture; and at last he maintained it with all the zeal and warmth of a profelyte. To prove the sincerity of his conversion, he treated his adversaries with scurrilous nicknames, banter, and abuse; a species of reasoning which seldom succeeds in recommending a bad cause, and which never confers credit on one that is good.

Resurrec-
tion.

our Lord foretels that the third day after his death he shall rise from the grave. Here no place was reserved for deception. The sect of the Pharisees and the chief priests are openly warned and put upon their guard; and, very fortunately for the cause of Christianity, this singular prediction was not heard with scorn, or indeed, if with scorn, it was only affected. We know from the sentiments expressed in the council, that our Lord was secretly dreaded by the rulers; that his miracles were far from being discredited; and that his predictions, in their private opinion, were not to be slighted. The means accordingly which they employed to prevent, even in the very appearance, the completion of his prophecy, were admirably calculated to remove the scruples of the most wary and sceptical inquirers, if their object was only to search after truth. At the next festival of the pass-over, when the scheme of Caiaphas was put in execution, and when it was deemed expedient by the council that he should die, to save the nation from the jealousy of the Romans; as a proof of their steady loyalty to Rome he was apprehended, was tried as an enemy to her government, was at last condemned upon false evidence, and suspended on a cross until they were fully satisfied of his death. Even after his death, the spear of a soldier was thrust into his side; and the water that gushed out with the blood is a proof to those who are acquainted with the structure and economy of living bodies, that he must have been some time dead.

50
And above
all by His
own resur-
rection.

After he was taken down from the cross, a seal was put on the door of the sepulchre in which he was laid, as the best check against secret fraud; and a guard of soldiers was stationed around it, as the best security against open violence. In spite, however, of all these precautions, the prediction was accomplished; the angel of God, descending from heaven with a countenance like lightning, and with raiment white as snow; the watch shake, and become as dead men; the earth quakes; the stone is rolled from the mouth of the sepulchre; the angel sits on it, and our Lord comes forth.

It was in vain for the Jews to allege that his disciples came in the night, and stole him away, while the watch were asleep. One must smile at these puerile assertions. How came the disciples to know that the watch were asleep; or what excuse had the watch for sleeping, and incurring a punishment which they knew to be capital in the Roman law? and how came they, in the name of wonder, to be brought as an evidence for those transactions that happened at the time when they were asleep?

Whatever credit may be given by modern infidels to this ill-framed story, it is past dispute that it had none among the Jewish rulers at the time that it was current. Not long after our Saviour's resurrection, the apostles were called before the council, and threatened with death for teaching in the name of Jesus. Their boldness upon that occasion was so provoking to the rulers, that the threat would have been instantly put in execution, had not Gamaliel, a doctor of the law of high reputation, put them in mind of other impostors who had perished in their attempts to mislead the people; and concluded a very sensible speech with these remarkable words: "And now, I say unto you, refrain from these men, and let them alone; for if this counsel, or this work, be of men, it will come to nought; but if it be

of God, ye cannot overthrow it, lest haply ye be found even to fight against God." This advice the council followed. But is it possible that Gamaliel could have given it, or the council paid the least regard to it, had the story of the disciples stealing the body been then credited? Surely some among them would have observed, that a work or counsel, founded on imposture and fraud, could not be *supposed to be of God*, and they would unquestionably have slain the apostles.

The story of stealing the body is indeed one of the most senseless fictions that ever was invented in support of a bad cause. Our Lord was on earth 40 days after he arose. He appeared frequently to his disciples. He ate and drank in their presence; and when some of them doubted, he bade them handle him and see that he was not a spectre, showed the mark of the spear in his side, and the prints of the nails in his feet and hands. Besides thus appearing to his disciples, he was seen by more than 500 brethren at one time; all of whom, as well as his disciples, must necessarily have known him previous to his suffering, and could therefore attest that he was the person who was once dead, but was then alive. Yet for strangers in general, who had not seen him previous to his death, and could not therefore identify his person after he arose, our Lord reserved many other proofs that were equally convincing. Before his ascension, he bade his disciples wait till they received power, by the Holy Ghost descending upon them: That then they should be witnesses with him, both in Jerusalem, and in all Judea, and in Samaria, and unto the uttermost ends of the earth; in order that the people of all these nations, observing the miracles wrought in his name, might themselves become ocular witnesses that those who preached his resurrection were warranted to do so by his authority; and that this authority, on which so numerous miracles attended, must be divine.

We intend not here to examine the minute objections⁵¹ and cavils that have been advanced respecting the truth of this important fact. The kinds, however, we shall mention in general. Some have doubted of our Lord's resurrection, as being an event which is not confirmed by general experience, because they imagine that what happens once should happen again, and even repeatedly, in order to be true. Some, taking their own to be preferable schemes, have objected to the way in which it happened, and to the manner in which it is narrated.—Some have imagined, that possibly the gospel history may be false; that possibly the disciples were very ignorant, and might be deceived; that possibly, too, they were deep politicians, and a set of impostors; and that possibly the writings which detected their falsehoods may have been destroyed. It is difficult to reason, and worse to convince, against this evidence of possibilities: but we flatter ourselves, that to the candid reader it will appear sufficiently overturned in our article MIRACLE; where it is shown that neither clowns nor politicians could have acted the part that was acted by the apostles, had not the resurrection been an undoubted fact.

Some of the objectors to it have also maintained, that possibly there is nothing material without us, that there is nothing mental within us, and that possibly the whole world is ideas. This mode of arguing we pretend not to explain; it is thought by some to proceed entirely from a perverseness of mind or disposition, while in books

Resurrec-
tion.

Resurrec-
tion.52
Importance
of the doc-
trine of a
resurrec-
tion.

of medicine it is always considered as a symptom of disease, and the patient recommended to be treated in the hospital, and not in the academy.

By his raising others, and particularly by rising himself, from the dead, our Saviour demonstrated that a resurrection from the dead is possible. And on that authority, which by his miracles he proved to be divine, he declared to his followers, that there is to be a general resurrection both of the just and of the unjust, instructing his disciples to propagate this doctrine through all nations; St Paul confessing, that if there be no resurrection of the dead, preaching is vain, and our faith is vain.

53
Of the or-
der in
which the
dead are to
be raised.

As to the order of succession in which the dead are to be raised, the Scriptures are almost silent. St Paul says, that every man is to rise in his own order, and that the dead in Christ are to rise first: and St John observed in his vision, that the souls of them which were beheaded for the witness of Jesus, and for the word of God, and which had not worshipped the beast, neither his image, neither had received his mark upon their foreheads, or in their hands, lived and reigned with Christ a thousand years; but the rest of the dead lived not again until the thousand years (y) were finished.

54
With what
bodies they
shall rise.

A question that has much oftener agitated the minds of men is, with what sort of bodies are the dead to be raised? St Paul has answered, with incorruptible and immortal bodies (z). And to silence the disputatious caviller of his day, he illustrated his doctrine by the growth of grain. "Thou fool (said he), that which thou sowest, thou sowest not that body that shall be, but bare grain, it may chance of wheat or of some other grain." To us it appears very surprising, that any one who reads this passage with the slightest attention, should perplex himself, or disturb the church with idle attempts to prove the identity of the bodies with which we shall die and rise again at the last day. The apostle expressly affirms, that "flesh and blood cannot inherit the kingdom of God; that we shall all be changed, in a moment, in the twinkling of an eye, at the last trump; that there are celestial bodies and bodies terrestrial; and that the glory of the celestial is one, and the glory of the terrestrial another."

That this implies a total change of qualities, will admit of no dispute; but still it has been considered as an article of the Christian faith, that we are to rise with the same bodies in respect of substance. What is meant by the identity of substance, with qualities wholly different, it is not very easy to conceive. Perhaps the meaning may be, that our incorruptible bodies shall consist of the same material particles with our mortal bodies, though these particles will be differently arranged to produce the different qualities. But as the particles of our present bodies are constantly changing, and as different particles compose the body at different times, a question has been put, With what set of particles shall we rise? Here a singular variety of opinions have been held.

* Leibnitz.

Some * contend, that we shall rise with the original

stamp of our bodies derived from our parents; some are for rising with that set of particles which they had at birth; some with the set which they are to have at death; and some with the particles which remain after maceration in water†; though, God knows, that if this maceration be continued long, these may arise with few or no particles at all. Another query has given much alarm. What if any of these particles should enter a vegetable, compose its fruit, and be eaten by a man, woman, or a child? Will not a dispute, similar to that apprehended by the Sadducees about the wife of the seven brothers, necessarily follow, whose particles are they to be at the resurrection? Against this confusion, they trust that the goodness and wisdom of heaven will take all the proper and necessary measures; and they even venture to point out a way in which that may be done. A foot deep of earth, they observe, in two or three of the counties of England, supposing each person to weigh on an average about seven stones and a few pounds, would amply supply with material bodies 600,000,000 of souls for no less a space than 20,000 years‡; and therefore there seems to be no necessity for the vamping up of their old materials to lodge and accommodate new souls.

Resurrec-
tion.

† Hody.

§ See Hody's
Resurrection
of the same
body asserted.

But, unluckily here, the question is not about the possibility of keeping the particles of different bodies separate and distinct. The question is rather, What have the Scriptures determined on the subject? Now the Scriptures say, that the spirit returns unto God who gave it. And should it be asked, in what place does he reserve it till the resurrection? the Scriptures reply, in the place of the dead; because the soul descends into the pit, is redeemed from the grave; and the sting of death, the last enemy that is to be destroyed, shall be taken away when the trumpet of God shall sound: at which time the dead that sleep in their graves shall awake, shall hear the voice, and shall come forth. There is not here so much as a word concerning the body; and therefore it was asked with what bodies are the dead to be raised? To which it was answered, the vile body is to be changed. The body which is, is not the body which shall be; for the incorruptible must put on incorruption, and that which is mortal, put on immortality.

This curious discovery of the sentiments of Scripture we owe to a lay-man, the celebrated Locke; who, in one of his controversies with the bishop of Worcester, came to understand what he knew not before, namely, that nowhere have the Scriptures spoken of the resurrection of the same body in the sense in which it is usually conceived. The resurrection of the same person is indeed promised; and how that promise may be fulfilled, notwithstanding the constant change of the particles of the body, has been shown in another place. See METAPHYSICS, Part III. Chap. iii.

The advocates, therefore, for the resurrection of the mortal body, have again been obliged to betake themselves to the shifts of reasoning. It is proper, say they,

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that

(y) These thousand years formed the happy millenium so often mentioned in the ancient fathers; and the learned Burnet, in his Theory of the Earth, has endeavoured to prove, that a similar notion prevailed among the Jews. See MILLENIUM.

(z) Our Saviour rose with the same body, both as to substance and qualities; because it was necessary that his person should be known and identified after his resurrection.

Resurrec-
tion
||
Retarda-
tion.

that the same bodies which have been accomplices in our vices and virtues, should also share in our rewards and punishments. Now, granting they will, shall one set of particles be bound for the crimes, or be entitled to receive the rewards, of the animal system, from its first commencement to its dissolution? or shall every particle rise up successively, and receive its dividend of rewards and punishments for the vices and virtues that belonged to the system during the time that they were in union with the sentient principle? and is the hand that fell in defending a father to be (as is supposed in some of the eastern countries) rewarded in heaven; while the other that struck him when the son became vicious, is dismissed into torments?

Finding this hypothesis supported by neither Scripture nor reason, they next appeal to the ancient fathers. And they, it is confessed, are for the resurrection of the very same flesh. But this notion is directly contrary to the Scriptures, which have said, that flesh and blood are not to inherit the kingdom of God.

55
State after
the resur-
rection.

But whatever be the bodies with which the dead are to be raised at the general resurrection, all mankind must appear in judgment, and receive sentence according to the deeds done in the body, without regard, so far as we know, to their actions and conduct in the middle state. After this sentence, the righteous are to enter into celestial and eternal joys, and the wicked to suffer the punishments of hell. These punishments some have supposed to be everlasting; others think, that after some temporary punishment, the souls of the wicked are to be annihilated; and others imagine, that after doing purgatorial penance for a while in hell, they are to be again received into favour; inclining to explain the denunciations of the Almighty as a child would do the threatenings of his mother, or a lover the affected chidings of his mistress (A).

RESUSCITATION, the same with resurrection and revivification. See the preceding article and RE-ANIMATION.

The term *resuscitation*, however, is more particularly used by chemists for the reproducing a mixed body from its ashes; an art to which many have pretended, as to reproduce plants, &c. from their ashes.

RETAIL, in commerce, is the selling of goods in small parcels, in opposition to wholesale. See COMMERCE.

RETAINER, a servant who does not continually dwell in the house of his master, but only attends upon special occasions.

RETAINING FEE, the first fee given to a serjeant or counsellor at law, in order to make him sure, and prevent his pleading on the contrary side.

RETALIATION, among civilians, the act of returning like for like.

RETARDATION, in physics, the act of diminishing the velocity of a moving body. See GUNNERY, MECHANICS, PNEUMATICS, and PROJECTILES.

RETE MIRABILE, in anatomy, a small plexus or network of vessels in the brain, surrounding the pituitary gland.

RETENTION is defined by Mr Locke to be, a faculty of the mind, whereby it keeps or retains those simple ideas it has once received, by sensation or reflection. See METAPHYSICS, Part I. Chap. ii.

RETENTION is also used, in medicine, &c. for the state of contraction in the solids or vascular parts of the body, which makes them hold fast their proper contents. In this sense, retention is opposed to evacuation and excretion.

RETICULAR BODY (*corpus reticulare*), in anatomy, a very fine membrane, perforated, in the manner of a net, with a multitude of foramina. It is placed immediately under the cuticle; and when that is separated from the cutis, whether by art or accident, this adheres firmly to it, and is scarce possible to be parted from it, seeming rather to be its inner superficies than a distinct substance. In regard to this, we are to observe, first, the places in which it is found, being all those in which the sense of feeling is most acute, as in the palms of the hands, the extremities of the fingers, and on the soles of the feet. The tongue, however, is the part where it is most accurately to be observed: it is more easily distinguishable there than anywhere else, and its nature and structure are most evidently seen there.

Its colour in the Europeans is white; but in the negroes and other black nations it is black; in the tawny it is yellowish: the skin itself in both is white; and the blackness and yellowness depend altogether on the colour of this membrane.

The uses of the corpus reticulare are to preserve the structure of the other parts of the integuments, and keep them in their determinate form and situation. Its apertures give passage to the hairs and sweat through the papillæ and excretory ducts of the skin: it retains these in a certain and determinate order, that they cannot be removed out of their places, and has some share in preserving the softness of the papillæ, which renders them fit for the sense of feeling. See ANATOMY, n° 83.

RETICULUM, is a Latin word, signifying a *little or casting net*. It was applied by the Romans to a particular mode of constructing their buildings. In the city of Salino (see SALINO) are still to be seen remains of some walls, evidently of Roman origin from the *reticulum*. This structure consists of small pieces of baked earth cut lozengewise, and disposed with great regularity on the angles, so as to exhibit to the eye the appearance of cut diamonds; and was called *reticular*, from its resemblance to fishing-nets. The Romans always concealed it under a regular coating of other matter; and Mr Houel informs us, that this was the only specimen of it which he saw in all his travels through Sicily, Malta, and Lipari. It appears to be the remains of some baths, which

Rete
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Reticulum

(A) The French convention, whose principles are equally new, daring, and destructive of all that is decent or of good report, have decided this question in a very summary way, by decreeing death to be an eternal sleep; a decree equally absurd in itself and fatal in its consequences. Since this article went to the press, however, we have learned, from the most respectable authority, that wild and absurd as the opinion is, it has been industriously propagated in this country, and that in some places it has gained ground. The consequences of this, were it to become general, must indeed be baneful beyond all conception; and we shall afterwards take occasion to expose the opinion and its nefarious consequences at greater length than it is now possible to do in this place. See THEOLOGY.

Retimo which have been built for the convenience of sea-bathing.

Retirement

RETIMO, the ancient *Rhitymnia* of Stephen the geographer, and called by Ptolemy *Rhitymna*, is a fine city, lying at one end of a rich and fertile plain, on the north coast of the island of Candia. It is but a small place, containing scarce 6000 inhabitants; but it is a bishop's see, and the harbour is defended by a citadel, where a bashaw resides. It was taken by the Turks in 1647, and has been in their hands ever since. It is about 45 miles from Candia. E. Long. 24. 45. N. Lat. 35. 22.

The citadel, which stands on a rock jutting out into the sea, would be sufficient for the defence of the city, were it not situated at the foot of an high hill, from which it might be cannonaded with great advantage. The harbour is now almost filled with sand, and is no longer accessible to shipping; nor do the Turks in any measure oppose the ravages of time, but behold with a careless eye the most valuable works in a state of ruin. The French had formerly a vice-consul at Retimo, to which ships used to repair for cargoes of oil; but they have been long unable to get into the harbour: to repair which, however, and to revive the commerce of Retimo, would be a most useful attempt. The plains around the city abound in a variety of productions. Great quantities of oil, cotton, saffron, and wax, are produced here; and they would be produced in still greater quantities if the inhabitants could export their commodities. The gardens of Retimo bear the best fruits in the island; excellent pomegranates, almonds, pistacho nuts, and oranges. The apricot-tree, bearing the michmich, the juice of which is so delicious, and its flavour so exquisite, is found here. It is a kind of early peach, but smaller and more juicy than those of France.

RETINA, in anatomy, the expansion of the optic nerves over the bottom of the eye, where the sense of vision is first received. See *ANATOMY*, n^o 142. and *OPTICS (Index) at Eye and Vision*.

RETINUE, the attendants or followers of a prince or person of quality, chiefly in a journey.

RETIRADE, in fortification, a kind of retrenchment made in the body of a bastion, or other work, which is to be disputed, inch by inch, after the defences are dismantled. It usually consists of two faces, which make a re-entering angle. When a breach is made in a bastion, the enemy may also make a retirade or new fortification behind it.

RETIREMENT, means a private way of life or a secret habitation. "Few (says an elegant writer) are able to bear solitude; and though retirement is the ostensible object of the greater part, yet, when they are enabled by success to retire, they feel themselves unhappy. Peculiar powers and elegance of mind are necessary to enable us to draw all our resources from ourselves. In a remote and solitary village the mind must be internally active in a great degree, or it will be miserable for want of employment. But in great and populous cities, even while it is passive, it will be constantly amused. It is impossible to walk the streets without finding the attention powerfully solicited on every side. No exertion is necessary. Objects pour themselves into the senses, and it would be difficult to prevent their admittance. But, in retirement, there must be a spirit of philosophy and a store of learning,

or else the fancied scenes of bliss will vanish like the colours of the rainbow. Poor Cowley might be said to be melancholy mad. He languished for solitude, and wished to hide himself in the wilds of America. But, alas! he was not able to support the solitude of a country village within a few miles of the metropolis!

"With a virtuous and cheerful family, with a few faithful and good-humoured friends, with a well-selected collection of elegant books, and with a competency, one may enjoy comforts even in the deserted village, which the city, with all its diversions, cannot supply."

RETORT, in chemistry, an oblong or globular vessel with its neck bent, proper for distillation. See *CHEMISTRY*, n^o 576.

In the fifth volume of the Transactions of the London Society for the Encouragement of Arts, p. 96. we find a paper containing a method for preventing stone retorts from breaking; or stopping them when cracked, during any chemical operation, without losing any of the contained subject. "I have always found it necessary (says the writer) to use a previous coating for filling up the interstices of the earth or stone, which is made by dissolving two ounces of borax in a pint of boiling water, and adding to the solution as much slaked lime as will make it into a thin paste; this, with a common painter's brush, may be spread over several retorts, which when dry are then ready for the proper preserving coating. The intention of this first coating is, that the substances thus spread over, readily vitrifying in the fire, prevent any of the distilling matters from pervading the retort, but does in nowise prevent it from cracking.

"Whenever I want to use any of the above coated retorts; after I have charged them with the substance to be distilled, I prepare a thin paste, made with common linseed oil and slaked lime well mixed, and perfectly plastic, that it may be easily spread: with this let the retorts be covered all over except that part of the neck which is to be inserted into the receiver; this is readily done with a painter's brush: the coating will be sufficiently dry in a day or two, and they will then be fit for use. With this coating I have for several years worked my stone retorts, without any danger of their breaking, and have frequently used the same retort four or five times; observing particularly to coat it over with the last mentioned composition every time it is charged with fresh materials: Before I made use of this expedient, it was an even chance, in conducting operations in stone and earthen retorts, whether they did not crack every time; by which means great loss has been sustained. If at any time during the operation the retorts should crack, spread some of the oil composition thick on the part, and sprinkle some powder of slaked lime on it, and it immediately stops the fissure, and prevents any of the distilling matter from pervading; even that subtle penetrating substance the solid phosphorus will not penetrate through it. It may be applied without any danger, even when the retort is red hot; and when it is made a little stiffer, is more proper for luting vessels than any other I ever have tried; because if properly mixed it will never crack, nor will it indurate so as to endanger the breaking the necks of the vessels when taken off."

RETRACTS, among horsemen, prieks in a horse's feet, arising from the fault of the farrier in driving nails

Retort,
Retracts.

Retreat
||
Return.

that are weak, or in driving them ill-pointed, or otherwise amiss.

RETREAT, in a military sense. An army or body of men are said to retreat when they turn their backs upon the enemy, or are retiring from the ground they occupied: hence every march in withdrawing from the enemy is called a *retreat*.

That which is done in sight of an active enemy, who pursues with a superior force, is the most important part of the subject; and is, with reason, looked upon as the glory of the profession. It is a manœuvre the most delicate, and the properest to display the prudence, genius, courage, and address, of an officer who commands: the historians of all ages testify it; and historians have never been so lavish of eulogiums as on the subject of the brilliant retreats of our heroes. If it is important, it is no less difficult to regulate, on account of the variety of circumstances, each of which demands different principles, and an almost endless detail. Hence a good retreat is esteemed, by experienced officers, the masterpiece of a general. He should therefore be well acquainted with the situation of the country through which he intends to make it, and careful that nothing is omitted to make it safe and honourable. See **WAR**.

RETREAT, is also a beat of the drum, at the firing of the evening gun; at which the drum-major, with all the drums of the battalion, except such as are upon duty, beats from the camp-colours on the right to those on the left, on the parade of encampment: the drums of all the guards beat also; the trumpets at the same time founding at the head of their respective troops. This is to warn the soldiers to forbear firing, and the sentinels to challenge, till the break of day that the reveille is beat. The retreat is likewise called *setting the watch*.

RETRENCHMENT literally signifies something cut off or taken from a thing; in which sense it is the same with subtraction, diminution, &c.

RETRENCHMENT, in the art of war, any kind of work raised to cover a post, and fortify it against the enemy, such as fascines loaded with earth, gambions, barrels of earth, sand-bags, and generally all things that can cover the men and stop the enemy. See **FORTIFICATION** and **WAR**.

RETRIBUTION, a handsome present, gratuity, or acknowledgment, given instead of a formal salary or hire, to persons employed in affairs that do not so immediately fall under estimation, nor within the ordinary commerce in money.

RETROMINGENTS, in natural history, a class or division of animals, whose characteristic is, that they stale or make water backwards, both male and female.

RETURN (*returna* or *retorna*), in law, is used in divers senses. 1. Return of writs by sheriffs and bailiffs is a certificate made by them to the court, of what they have done in relation to the execution of the writ directed to them. This is wrote on the back of the writ by the officer, who thus sends the writ back to the court from whence it issued, in order that it may be filed. 2. Return of a commission, is a certificate or answer sent to the court from whence the commission issues, concerning what has been done by the commissioners. 3. Returns, or days in bank, are certain days in each term, appointed for the return of writs, &c. Thus Hillary term has four returns, viz. in the king's-

Return
||
Retzia.

bench, on the day next after the octave, or eighth day after Hillary day: on the day next after the fifteenth day from St Hillary; on the day after purification; and on the next after the octave of the purification. In the common pleas, in eight days of St Hillary: from the day of St Hillary, in fifteen days: on the day after the purification: in eight days of the purification. Easter term has five returns, viz. in the king's-bench, on the day next after the fifteenth day from Easter: on the day next after the three weeks from Easter: on the day next after one month from Easter: on the day next after five weeks from Easter: and on the day next after the day following ascension-day. In the common pleas, in fifteen days from the feast of Easter: in three weeks from the feast of Easter: in one month from Easter day: in five weeks from Easter day: on the day after the ascension-day. Trinity term has four returns, viz. on the day following the second day after Trinity: on the day following the eighth day after Trinity: on the day next after the fifteenth day from Trinity: on the day next after three weeks from Trinity. In the common pleas, on the day after Trinity: in eight days of Trinity: in fifteen days from Trinity: in three weeks from Trinity. Michaelmas term has six returns, viz. on the day next after three weeks from St Michael: on the day next after one month of St Michael: on the day following the second day after All-souls: on the day next after the second day after St Martin: on the day following the octave of St Martin: on the day next after fifteen days of St Martin. In the common pleas, in three weeks from St Michael: in one month from St Michael: on the day after All-souls: on the day after St Martin: on the octave of St Martin: in fifteen days from St Martin. It is to be observed, that, as in the king's-bench, all returns are to be made on some particular day of the week in each term, care must be taken not to make the writs out of that court returnable on a non-judicial day; such as Sunday, and All-saints, in Michaelmas term, the purification in Hillary, the ascension in Easter, and Midsummer-day, except it should fall on the first day of Trinity term.

RETURNS, in a military sense, are of various sorts, but all tending to explain the state of the army, regiment, or company; namely, how many capable of doing duty, on duty, sick in quarters, barracks, infirmary, or hospital; prisoners, absent with or without leave; total effective; wanting to complete the establishment, &c.

RETUSARI, an island in Russia, is a long slip of land, or rather sand, through the middle of which runs a ridge of granite. It is 20 miles from Petersburg by water, four from the shore of Ingria, and nine from the coast of Carelia. It is about 10 miles in circumference, and was overspread with firs and pines when Peter first conquered it from the Swedes. It contains at present about 30,000 inhabitants, including the sailors and garrison, the former of whom amount to about 12,000, the latter to 1500 men. The island affords a small quantity of pasture, produces vegetables, and a few fruits, such as apples, currants, gooseberries, and strawberries, which thrive in this northern climate.

RETZ (Cardinal de). See **GONDI**.

RETZIA, in botany; a genus of the monogynia order, belonging to the pentandria class of plants, and to

Coxe's Travels into Russia.

Reutlingen to the 29th natural order, *Campanacea*. The capsule is bilocular, the corolla cylindrical, and villous without; the stigma bifid.

Revelation.

REUTLINGEN, a handsome, free, and imperial town of Germany, in the circle of Suabia, and duchy of Wirtemberg; seated in a plain on the river Eschez, near the Neckar, adorned with handsome public buildings, and has a well frequented college. E. Long. 9. 10. N. Lat. 48. 31.

REVE, REEVE, or *Greve*, the bailiff of a franchise, or manor, thus called, especially in the west of England. Hence shire-reeve, sheriff, port-greve, &c.

REVEILLE, a beat of drum about break of day, to give notice that it is time for the soldiers to arise, and that the sentries are to forbear challenging.

REVEL, a port town of Livonia, situated at the south entrance of the gulph of Finland, partly in a plain and partly on a mountain; 133 miles south-west of Petersburg, and 85 south-east of Abo. It is a place of great trade, and holds two fairs yearly, which are visited by merchants from all countries, but particularly by those of England and Holland. It is a strong and a rich place, with a capital harbour. It is surrounded with high walls and deep ditches, and defended by a castle and stout bastions. It was confirmed to the Swedes at the peace of Oliva, conquered by Peter the Great in 1710, and ceded to Russia in 1721. The conquest of it was again attempted by the Swedes in 1790. The duke of Sudermania, with the Swedish fleet, attempted to carry the harbour; but after an obstinate engagement with the Russian fleet, he was obliged to give it up; but it was but for a very short while. He retired about 10 leagues from the harbour, to repair the damage his fleet had sustained, and to prepare for a second attack before any relief could be afforded to the Russian fleet. As soon as he had refitted, he sailed for the harbour, at a league distant from which the Russian fleet was discovered, ready to dispute with the Swedes the entrance. Upon a council being held by the Duke, it was resolved to attack the Russians; and the signals being given, the fleet bore down for the attack, which was maintained for near six hours with the utmost fury: at length the Swedes broke the Russian line, which threw them into much confusion; when the Swedes, taking the advantage of the general confusion into which the Russians were thrown, followed them with their whole force into the harbour, where the conflict and carnage were dreadful on both sides, though the Swedes certainly had the worst of it; at the same time that their skill and bravery is indisputable.

This valuable place was again confirmed to Russia by the peace. The government of Revel or Esthonia is one of the divisions of the Russian empire, containing five districts. 1. Revel, on the Baltic sea. 2. Baltic-port, about 40 versts westward from Revel. 3. Habsal, or Hapsal, a maritime town. 4. Weissenstein, on the rivulet Saida, about 80 versts from Revel. 5. Wefenberg, about 100 versts from Revel, at about an equal distance from that town and Narva.

REVELATION, the act of revealing, or making a thing public that was before unknown; it is also used for the discoveries made by God to his prophets, and by them to the world; and more particularly for the books of the Old and New Testament. See BIBLE,

CHRISTIANITY, MIRACLE, RELIGION, and THEOLOGY. Revelation.

The principal tests of the truth of any revelation, are the tendency of its practical doctrines; its consistency with itself, and with the known attributes of God; and some satisfactory evidence that it cannot have been derived from a human source.

Before any man can receive a written book as a revelation from God, he must be convinced that God exists, and that he is possessed of almighty power, infinite wisdom, and perfect justice. Now should a book teaching absurd or immoral doctrines (as many chapters of the Koran do, and as all the traditionary systems of Paganism did), pretend to be revealed by a God of wisdom and justice, we may safely reject its pretensions without farther examination than what is necessary to satisfy us that we have not misunderstood its doctrine. Should a book claiming this high origin, enjoin in one part of it, and forbid in another, the same thing to be done under the same circumstances, we may reject it with contempt and indignation; because a being of infinite wisdom can never act capriciously or absurdly. Still, however, as it is impossible for us to know how far the powers of men may reach in the investigation or discovery of useful truth, some farther evidence is necessary to prove a doctrine of divine origin, than its mere consistency with itself, and with the principles of morality; and this evidence can be nothing but the power of working miracles exhibited by him by whom it was originally revealed. In every revelation confirmed by this evidence, many doctrines are to be looked for which human reason cannot fully comprehend; and these are to be believed on the testimony of God, and suffered to produce their practical consequences. At this kind of belief the shallow infidel may smile contemptuously; but it has place in arts and sciences as well as in religion. Whoever avails himself of the demonstrations of Newton, Bernoulli, and others, respecting the resistance of fluids, and applies their conclusions to the art of ship-building, is as implicit a believer, if he understand not the principles of fluxions, as any Christian; and yet no man will say that his faith is not productive of important practical consequences. He believes, however, in man, while the Christian believes in God; and therefore he cannot pretend that his faith rests on a surer foundation.

Mr Locke, in laying down the distinct provinces of reason and faith, observes, 1. That the same truths may be discovered by revelation which are discoverable to us by reason. 2. That no revelation can be admitted against the clear evidence of reason. 3. That there are many things of which we have but imperfect notions, or none at all; and others, of whose past, present, or future existence, by the natural use of our faculties we cannot have the least knowledge: and these, being beyond the discovery of our faculties, and above reason, when revealed, become the proper object of our faith. He then adds, that our reason is not injured or disturbed, but assisted and improved, by new discoveries of truth coming from the fountains of knowledge. Whatever God has revealed is certainly true; but whether it be a divine revelation or not, reason must judge, which can never permit the mind to reject a greater evidence to embrace what is less evident.

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||
Revenue.

dent. There can be no evidence that any traditional revelation is of divine original, in the words we receive it, and the sense we understand it, so clear and so certain as that of the principles of reason: and, therefore, nothing that is contrary to the clear and self-evident dictates of reason, has a right to be urged or assented to as a matter of faith, wherein reason has nothing to do.

REVELATION of *St John*. See APOCALYPSE.

REVELS, entertainments of dancing, masking, acting comedies, farces, &c. anciently very frequent in the inns of court and in noblemens houses, but now much disused. The officer who has the direction of the revels at court is called the *MASTER of the Revels*.

REVENGE, means the return of injury for injury, and differs materially from that sudden resentment which rises in the mind immediately on being injured; which, so far from being culpable when restrained within due bounds, is absolutely necessary for self-preservation. Revenge, on the contrary, is a cool and deliberate wickedness, and is often executed years after the offence was given; and the desire of it is generally the effect of littleness, weakness, and vice; while, to do right, and to suffer wrong, is an argument of a great soul, that scorns to stoop to suggested revenges.

Revenge is but a frailty incident

To craz'd and sickly minds; the poor content

Of little souls, unable to surmount

An injury, too weak to bear affront.

Dryden.

Revenge is generally the concomitant of savage minds, of minds implacable, and capable of the most horrid barbarities; unable to set any limits to their displeasure, they can confine their anger within no bounds of reason.

Cruel revenge, which still we find

The weakest frailty of a feeble mind.

Degenerous passion, and for man too base,

It seats its empire in the savage race.

Juvenal.

The institution of law prevents the execution of private revenge, and the growth of civilization shows its impropriety. Though in modern times a species of revenge is sanctioned by what is called the law of honour, which evades the law of the land indeed, but which is equally mean and disgraceful as the other kinds, and is of consequences equally baneful. See *ANGER*, *DUELING*, and *RESENTMENT*.

REVENUE, the annual income a person receives from the rent of his lands, houses, interest of money in the stocks, &c.

Royal Revenue, that which the British constitution hath vested in the royal person, in order to support his dignity and maintain his power; being a portion which each subject contributes of his property, in order to secure the remainder. This revenue is either *ordinary* or *extraordinary*.

I. The king's *ordinary* revenue is such as has either subsisted time out of mind in the crown; or else has been granted by parliament, by way of purchase or exchange for such of the king's inherent hereditary revenues as were found inconvenient to the subject.—In saying that it has subsisted time out of mind in the crown, we do not mean that the king is at pre-

sent in the actual possession of the whole of his revenue. Much (nay the greatest part) of it is at this day in the hands of subjects; to whom it has been granted out from time to time by the kings of England: which has rendered the crown in some measure dependent on the people for its ordinary support and subsistence. So that we must be obliged to recount, as part of the royal revenue, what lords of manors and other subjects frequently look upon to be their own absolute rights; because they and their ancestors are and have been vested in them for ages, though in reality originally derived from the grants of our ancient princes.

1. The first of the king's ordinary revenues, which may be taken notice of, is of an ecclesiastical kind (as are also the three succeeding ones), viz. the custody of the temporalities of bishops. See *TEMPORALITIES*.

2. The king is entitled to a *CORODY*, as the law calls it, out of every bishopric; that is, to send one of his chaplains to be maintained by the bishop, or to have a pension allowed him till the bishop promotes him to a benefice. This is also in the nature of an acknowledgement to the king, as founder of the see, since he had formerly the same corody or pension from every abbey or priory of royal foundation. It is supposed to be now fallen into total disuse; though Sir Matthew Hale says, that it is due of common right, and that no prescription will discharge it.

3. The king also is entitled to all the tithes arising in extraparochial places: though perhaps it may be doubted how far this article, as well as the last, can be properly reckoned a part of the king's own royal revenue; since a corody supports only his chaplains, and these extraparochial tithes are held under an implied trust that the king will distribute them for the good of the clergy in general.

4. The next branch consists in the first-fruits and tenths of all spiritual preferments in the kingdom. See *TENTHS*.

5. The next branch of the king's ordinary revenue (which, as well as the subsequent branches, is of a lay or temporal nature) consists in the rents and profits of the demesne lands of the crown. These demesne lands, *terra dominicales regis*, being either the share reserved to the crown at the original distribution of landed property, or such as came to it afterwards by forfeitures or other means, were anciently very large and extensive; comprising divers manors, honours, and lordships; the tenants of which had very peculiar privileges, when we speak of the tenure in ancient demesne. At present they are contracted within a very narrow compass, having been almost entirely granted away to private subjects. This has occasioned the parliament frequently to interpose; and particularly after King William III. had greatly impoverished the crown, an act passed, whereby all future grants or leases from the crown for any longer term than 31 years or three lives, are declared to be void; except with regard to houses, which may be granted for 50 years. And no reversionary lease can be made, so as to exceed, together with the estate in being, the same term of three lives or 31 years; that is, when there is a subsisting lease, of which there are 20 years still to come, the king cannot grant a future interest, to commence after the expiration of the former, for any longer term than 11 years.

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Revenue. years. The tenant must also be made liable to be punished for committing waste; and the usual rent must be reserved, or, where there has usually been no rent, one-third of the clear yearly value. The misfortune is, that this act was made too late, after almost every valuable possession of the crown had been granted away for ever, or else upon very long leases; but may be of benefit to posterity, when those leases come to expire.

6. Hither might have been referred the advantages which were used to arise to the king from the profits of his military tenures, to which most lands in the kingdom were subject, till the statute 12 Car. II. c. 24. which in great measure abolished them all. Hither also might have been referred the profitable prerogative of purveyance and pre-emption: which was a right enjoyed by the crown of buying up provisions and other necessaries, by the intervention of the king's purveyors, for the use of his royal household, at an appraised valuation, in preference to all others, and even without consent of the owner: and also of forcibly impressing the carriages and horses of the subject, to do the king's business on the public roads, in the conveyance of timber, baggage, and the like, however inconvenient to the proprietor, upon paying him a settled price. A prerogative which prevailed pretty generally throughout Europe during the scarcity of gold and silver, and the high valuation of money consequential thereupon. In those early times, the king's household (as well as those of inferior lords) were supported by specific renders of corn, and other victuals, from the tenants of the respective demesnes; and there was also a continual market kept at the palace-gate to furnish viands for the royal use. And this answered all purposes, in those ages of simplicity, so long as the king's court continued in any certain place. But when it removed from one part of the kingdom to another (as was formerly very frequently done), it was found necessary to send purveyors beforehand, to get together a sufficient quantity of provisions and other necessaries for the household: and, lest the unusual demand should raise them to an exorbitant price, the powers beforementioned were vested in these purveyors; who in process of time very greatly abused their authority, and became a great oppression to the subject, though of little advantage to the crown; ready money in open market (when the royal residence was more permanent, and specie began to be plenty) being found upon experience to be the best provider of any. Wherefore, by degrees, the powers of purveyance have declined, in foreign countries as well as our own: and particularly were abolished in Sweden by Gustavus Adolphus, towards the beginning of the last century. And, with us in England, having fallen into disuse during the suspension of monarchy, King Charles, at his restoration, consented, by the same statute, to resign entirely those branches of his revenue and power: and the parliament, in part of recompense, settled on him, his heirs, and successors, for ever, the hereditary excise of 15d. per barrel on all beer and ale sold in the kingdom, and a proportionable sum for certain other liquors. So that this hereditary excise now forms the sixth branch of his majesty's ordinary revenue.

7. A seventh branch might also be computed to have

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arisen from wine-licences; or the rents payable to the crown by such persons as are licensed to sell wine by retail throughout Britain, except in a few privileged places. These were first settled on the crown by the statute 12 Car. II. c. 25. and, together with the hereditary excise, made up the equivalent in value for the loss sustained by the prerogative in the abolition of the military tenures, and the right of pre-emption and purveyance: but this revenue was abolished by the statute 30 Geo. II. c. 19. and an annual sum of upwards of L. 7000 *per annum*, issuing out of the new stamp-duties imposed on wine-licences, was settled on the crown in its stead.

8. An eighth branch of the king's ordinary revenue is usually reckoned to consist in the profits arising from his forests. See FOREST. These consist principally in the amercements or fines levied for offences against the forest-laws. But as few, if any, courts of this kind for levying amercements have been held since 1632, 8 Char. I. and as, from the accounts given of the proceedings in that court by our histories and law-books, nobody would wish to see them again revived, it is needless to pursue this inquiry any farther.

9. The profits arising from the king's ordinary courts of justice make a ninth branch of his revenue. And these consist not only in fines imposed upon offenders, forfeitures of recognizances, and amercements levied upon defaulters; but also in certain fees due to the crown in a variety of legal matters, as, for setting the great seal to charters, original writs, and other forensic proceedings, and for permitting fines to be levied of lands in order to bar entails, or otherwise to insure their title. As none of these can be done without the immediate intervention of the king, by himself or his officers, the law allows him certain perquisites and profits, as a recompense for the trouble he undertakes for the public. These, in process of time, have been almost all granted out to private persons, or else appropriated to certain particular uses: so that, though our law proceedings are still loaded with their payment, very little of them is now returned into the king's exchequer; for a part of whose royal maintenance they were originally intended. All future grants of them, however, by the statute 1 Ann. st. 2. c. 7. are to endure for no longer time than the prince's life who grants them.

10. A tenth branch of the king's ordinary revenue, said to be grounded on the consideration of his guarding and protecting the seas from pirates and robbers, is the right to *royal fish*, which are whale and sturgeon: and these, when either thrown ashore, or caught near the coasts, are the property of the king, on account of their superior excellence. Indeed, our ancestors seem to have entertained a very high notion of the importance of this right; it being the prerogative of the kings of Denmark and the dukes of Normandy; and from one of these it was probably derived to our princes.

11. Another maritime revenue, and founded partly upon the same reason, is that of SHIPWRECKS. See WRECK.

12. A twelfth branch of the royal revenue, the right to mines, has its original from the king's prerogative of coinage, in order to supply him with materials; and there-

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Revenue. therefore those mines which are properly royal, and to which the king is entitled when found, are only those of silver and gold. See MINE.

13. To the same original may in part be referred the revenue of treasure-trove. See TREASURE-TROVE.

14. Waifs. See WAIF.

15. Estrays. See ESTRAY.

Besides the particular reasons, given in the different articles, why the king should have the several revenues of royal fish, shipwrecks, treasure-trove, waifs, and estrays, there is also one general reason which holds for them all; and that is, because they are *bona vacantia*, or goods in which no one else can claim a property. And, therefore, by the law of nature, they belonged to the first occupant or finder; and so continued under the imperial law. But, in settling the modern constitutions of most of the governments in Europe, it was thought proper (to prevent that strife and contention which the mere title of occupancy is apt to create and continue, and to provide for the support of public authority in a manner the least burdensome to individuals) that these rights should be annexed to the supreme power by the positive laws of the state. And so it came to pass, that, as Bracton expresses it, "*hæc, quæ nullius in bonis sunt, et olim fuerunt inventoris de jure naturali, jam efficiuntur principis de jure gentium.*"

16. The next branch of the king's ordinary revenue consists in forfeitures of lands and goods for offences; *bona confiscata*, as they are called by the civilians, because they belonged to the *fiscus* or imperial treasury; or, as our lawyers term them, *foris facta*, that is, such whereof the property is gone away or departed from the owner. The true reason and only substantial ground of any forfeiture for crimes, consist in this; that all property is derived from society, being one of those civil rights which are conferred upon individuals, in exchange for that degree of natural freedom which every man must sacrifice when he enters into social communities. If, therefore, a member of any national community violates the fundamental contract of his association, by transgressing the municipal law, he forfeits his right to such privileges as he claims by that contract; and the state may very justly resume that portion of property, or any part of it, which the laws have before assigned him. Hence, in every offence of an atrocious kind, the laws of England have exacted a total confiscation of the moveables or personal estate; and, in many cases, a perpetual, in others only a temporary, loss of the offender's immoveables or landed property; and have vested them both in the king, who is the person supposed to be offended, being the one visible magistrate in whom the majesty of the public resides. See FORFEITURE and DEODAND.

17. Another branch of the king's ordinary revenue arises from escheats of lands, which happen upon the defect of heirs to succeed to the inheritance; whereupon they in general revert to and vest in the king, who is esteemed, in the eye of the law, the original proprietor of all lands in the kingdom.

18. The last branch of the king's ordinary revenue, consists in the custody of idiots, from whence we shall be naturally led to consider also the custody of lunatics. See IDIOT and LUNATIC.

This may suffice for a short view of the king's ordi-

nary revenue, or the proper patrimony of the crown; which was very large formerly, and capable of being increased to a magnitude truly formidable: for there are very few estates in the kingdom that have not, at some period or other since the Norman conquest, been vested in the hands of the king, by forfeiture, escheat, or otherwise. But, fortunately for the liberty of the subject, this hereditary landed revenue, by a series of improvident management, is sunk almost to nothing; and the casual profits, arising from the other branches of the *census regalis*, are likewise almost all of them alienated from the crown. In order to supply the deficiencies of which, we are now obliged to have recourse to new methods of raising money, unknown to our early ancestors; which methods constitute.

II. The king's extraordinary revenue. For, the public patrimony being got into the hands of private subjects, it is but reasonable that private contributions should supply the public service. Which, though it may perhaps fall harder upon some individuals, whose ancestors have had no share in the general plunder, than upon others, yet, taking the nation throughout, it amounts to nearly the same; provided the gain by the extraordinary should appear to be no greater than the loss by the ordinary revenue. And perhaps, if every gentleman in the kingdom was to be stripped of such of his lands as were formerly the property of the crown, was to be again subject to the inconveniences of purveyance and pre-emption, the oppression of forest-laws, and the slavery of feudal-tenures; and was to resign into the king's hands all his royal franchises of waifs, wrecks, estrays, treasure-trove, mines, deodands, forfeitures, and the like; he would find himself a greater loser than by paying his *quota* to such taxes as are necessary to the support of government. The thing, therefore, to be wished and aimed at in a land of liberty, is by no means the total abolition of taxes, which would draw after it very pernicious consequences, and the very supposition of which is the height of political absurdity. For as the true idea of government and magistracy will be found to consist in this, that some few men are deputed by many others to preside over public affairs, so that individuals may the better be enabled to attend their private concerns; it is necessary that those individuals should be bound to contribute a portion of their private gains, in order to support that government, and reward that magistracy, which protects them in the enjoyment of their respective properties. But the things to be aimed at are wisdom and moderation, not only in granting, but also in the method of raising, the necessary supplies; by contriving to do both in such a manner as may be most conducive to the national welfare, and at the same time most consistent with economy and the liberty of the subject; who, when properly taxed, contributes only, as was before observed, some part of his property in order to enjoy the rest.

These extraordinary grants are usually called by the synonymous names of *aids*, *subsidies*, and *supplies*; and are granted by the commons of Great Britain, in parliament assembled. See PARLIAMENT and TAX.

The clear nett produce of the several branches of the revenue, after all charges of collecting and management paid, amounted in the year 1786 to about L. 15,397,000 Sterling, while the expenditure was found

Revenue. found to be about L. 14,477,000. How these immense sums are appropriated, is next to be considered. And this is, first and principally, to the payment of the interest of the national debt. See *NATIONAL Debt and FUNDS*.

The respective produces of the several taxes were originally separate and distinct funds; being securities for the sums advanced on each several tax, and for them only. But at last it became necessary, in order to avoid confusion, as they multiplied yearly, to reduce the number of these separate funds, by uniting and blending them together; superadding the faith of parliament for the general security of the whole. So that there are now only three capital funds of any account, the *aggregate* fund, and the *general* fund, so called from such union and addition; and the *South-Sea* fund, being the produce of the taxes appropriated to pay the interest of such part of the national debt as was advanced by that company and its annuitants. Whereby the separate funds, which were thus united, are become mutual securities for each other; and the whole produce of them, thus aggregated, liable to pay such interest or annuities as were formerly charged upon each distinct fund: the faith of the legislature being moreover engaged to supply any casual deficiencies.

The customs, excises, and other taxes, which are to support these funds, depending on contingencies, upon exports, imports, and consumptions, must necessarily be of a very uncertain amount; but they have always been considerably more than was sufficient to answer the charge upon them. The surplusses, therefore, of the three great national funds, the *aggregate*, *general*, and *South-Sea* funds, over and above the interest and annuities charged upon them, are directed by statute 3 Geo. I. c. 7. to be carried together, and to attend the disposition of parliament; and are usually denominated the *sinking fund*, because originally destined to sink and lower the national debt. To this have been since added many other entire duties, granted in subsequent years; and the annual interest of the sums borrowed on their respective credits is charged on, and payable out of, the produce of the sinking fund. However, the nett surplusses and savings, after all deductions paid, amount annually to a very considerable sum. For as the interest on the national debt has been at several times reduced (by the consent of the proprietors, who had their option either to lower their interest or be paid their principal), the savings from the appropriated revenues must needs be extremely large.

But, before any part of the *aggregate* fund (the surplusses whereof are one of the chief ingredients that form the sinking fund) can be applied to diminish the principal of the public debt, it stands mortgaged by parliament to raise an annual sum for the maintenance of the king's household and the civil list. For this purpose, in the late reigns, the produce of certain branches of the excise and customs, the post-office, the duty on wine-licences, the revenues of the remaining crown-lands, the profits arising from courts of justice, (which articles include all the hereditary revenues of the crown), and also a clear annuity of L. 120,000 in money, were settled on the king for life, for the support of his majesty's household, and the honour and dignity of the crown. And, as the amount of these several branches was uncertain, (though in the last reign they were computed to have sometimes raised almost a

million), if they did not arise annually to L. 800,000, the parliament engaged to make up the deficiency. But his present majesty having, soon after his accession, spontaneously signified his consent that his own hereditary revenues might be so disposed of as might best conduce to the utility and satisfaction of the public, and having graciously accepted a limited sum, the said hereditary and other revenues are now carried into, and made a part of, the *aggregate* fund; and the *aggregate* fund is charged with the payment of the whole annuity to the crown. The limited annuity accepted by his present majesty was at first L. 800,000, but it has been since augmented to L. 900,000. The expences themselves, being put under the same care and management as the other branches of the public patrimony, produce more, and are better collected than heretofore; and the public is a gainer of upwards of L. 100,000 *per annum* by this disinterested bounty of his majesty.

The sinking fund, though long talked of as the last resource of the nation, proved very inadequate to the purpose for which it was established. Ministers found pretences for diverting it into other channels; and the diminution of the national debt proceeded slowly during the intervals of peace, whilst each succeeding war increased it with great rapidity. To remedy this evil, and restore the public credit, to which the late war had given a considerable shock, Mr Pitt conceived a plan for diminishing the debt by a fund, which should be rendered unalienable to any other purpose. In the session 1786, he moved that the annual surplus of the revenue above the expenditure should be raised, by additional taxes, from L. 900,000 to one million Sterling, and that certain commissioners should be vested with the full power of disposing of this sum in the purchase of stock (see *FUNDS*), for the public, in their own names. These commissioners should receive the annual million by quarterly payments of L. 250,000, to be issued out of the exchequer before any other money, except the interest of the national debt itself; by these provisions, the fund would be secured, and no deficiencies in the national revenues could affect it, but such must be separately provided for by parliament.

The accumulated compound interest on a million yearly, together with the annuities that would fall into that fund, would, he said, in 28 years amount to such a sum as would leave a surplus of four millions annually, to be applied, if necessary, to the exigencies of the state. In appointing the commissioners, he should, he said, endeavour to choose persons of such weight and character as corresponded with the importance of the commission they were to execute. The speaker of the house of commons, the chancellor of the exchequer, the master of the rolls, the governor and deputy governor of the bank of England, and the accountant-general of the high court of chancery, were persons who, from their several situations, he should think highly proper to be of the number.

To the principle of this bill no objection was made, though several specious but ill-founded ones were urged against the sufficiency of the mode which the chancellor of the exchequer had adopted for the accomplishment of so great and so desirable an end. He had made it a clause in his bill, that the accumulating million should never be applied but to the purchase of stock. To this clause Mr Fox objected, and moved that the commis-

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sioners therein named should be impowered to accept so much of any future loan as they should have cash belonging to the public to pay for. This, he said, would relieve that distress the country would otherwise be under, when, on account of a war, it might be necessary to raise a new loan: whenever that should be the case, his opinion was, that the minister should not only raise taxes sufficiently productive to pay the interest of the loan, but also sufficient to make good to the sinking fund whatsoever had been taken from it.

If, therefore, for instance, at any future period a loan of six millions was proposed, and there was at that time one million in the hands of the commissioners, in such case they should take a million of the loan, and the *bonus* or *douceur* thereupon should be received by them for the public. Thus government would only have five millions to borrow instead of six; and from such a mode of proceeding, he said, it was evident great benefit would arise to the public.

This clause was received by Mr Pitt with the strongest marks of approbation, as was likewise another, moved by Mr Pulteney, enabling the commissioners named in the bill to continue purchasing stock for the public when it is above par, unless otherwise directed by parliament. With these additional clauses the bill was read a third time on the 15th of May, and carried up to the Lords, where it also passed without meeting with any material opposition, and afterwards received the royal assent.

The operation of this bill surpassed perhaps the minister's most sanguine expectation. The fund was ably managed, and judiciously applied; and in 1793 the commissioners had extinguished some millions of the public debt. The war, however, into which the nation was that year involved, and of which there is yet no certain prospect of a near end, has made it necessary to borrow additional sums, so large, that many years of peace must elapse before the operation of the fund can contribute sensibly to the relief of the people. The clear produce of the taxes raised on the people of this country was, in the year 1792, very near L. 17,000,000; and it must henceforth, from the accumulation of the debt, and the enormous expence of the present war, be necessarily rendered greater.

REVENUE, in hunting, a fleshy lump formed chiefly by a cluster of whitish worms on the head of the deer, supposed to occasion the casting of their horns by gnawing them at the root.

REVERBERATION, in physics, the act of a body repelling or reflecting another after its impinging thereon.

REVERBERATION, in chemistry, denotes a kind of circulation of the flame by means of a reverberatory furnace.

REVERBERATORY, or *REVERBERATING Furnace*. See *CHEMISTRY-Index* at *Furnace*, and *FURNACE*.

REVEREND, a title of respect given to ecclesiastics.—The religious abroad are called *reverend fathers*, and abbesses, prioresses, &c. *reverend mothers*. In England, bishops are *right reverend*, and archbishops *most reverend*. In France, before the Revolution, their bishops, archbishops, and abbots, were all alike *most reverend*. In Scotland the clergy individually are *reverend*, a synod is *very reverend*, and the general assembly is *venerable*.

REVERIE, the same with delirium, raving, or distraction. It is used also for any ridiculous, extra-

vagant imagination, action, or proposition, a chimera, or vision. But the most ordinary use of the word among English writers, is for a deep disorderly musing or meditation.

REVERSAL of JUDGMENT, in law. A judgment may be falsified, reversed, or voided, in the first place, *without a writ of error*, for matters foreign to or *dehors* the record, that is, not apparent upon the face of it; so that they cannot be assigned for error in the superior court, which can only judge from what appears in the record itself; and therefore, if the whole record be not certified, or not truly certified, by the inferior court, the party injured thereby (in both civil and criminal cases) may allege a diminution of the record, and cause it to be rectified. Thus, if any judgment whatever be given by persons who had no good commission to proceed against the person condemned, it is void; and may be falsified by shewing the special matter, without writ of error. As, where a commission issues to A and B, and twelve others, or any two of them, of which A or B shall be one, to take and try indictments; and any of the other twelve proceed without the interposition or presence of either A or B: in this case all proceedings, trials, convictions, and judgments, are void for want of a proper authority in the commissioners, and may be falsified upon bare inspection, without the trouble of a writ of error; it being a high misdemeanour in the judges so proceeding, and little (if any thing) short of murder in them all, in case the person so attainted be executed and suffer death. So likewise if a man purchases land of another; and afterwards the vender is, either by outlawry or his own confession, convicted and attainted of treason or felony previous to the sale or alienation; whereby such land becomes liable to forfeiture or escheat: now, upon any trial, the purchaser is at liberty, without bringing any writ of error, to falsify not only the time of the felony or treason supposed, but the very point of the felony or treason itself; and is not concluded by the confession or the outlawry of the vender, though the vender himself is concluded, and not suffered now to deny the fact, which he has by confession or flight acknowledged. But if such attainder of the vender was by verdict, on the oath of his peers, the alienee cannot be received to falsify or contradict the *fact* of the crime committed; though he is at liberty to prove a mistake in *time*, or that the offence was committed after the alienation, and not before.

Secondly, a judgment may be reversed, *by writ of error*, which lies from all inferior criminal jurisdictions to the court of king's-bench, and from the king's-bench to the house of peers; and may be brought for notorious mistakes in the judgment or other parts of the record: as where a man is found guilty of perjury, and receives the judgment of felony, or for other less palpable errors; such as any irregularity, omission, or want of form in the process of outlawry, or proclamations; the want of a proper addition to the defendant's name, according to the statute of additions; for not properly naming the sheriff or other officer of the court, or not duly describing where his county-court was held: for laying an offence, committed in the time of the late king, to be done against the peace of the present; and for many other similar causes, which (though allowed out of tenderness to life and liberty) are not much to the credit or advancement of the national justice.—These writs of error, to reverse judgments in case of

mis.

Reversal || **Reversion.** misdemeanours, are not to be allowed of course, but on sufficient probable cause shown to the attorney-general; and then they are understood to be grantable of common right, and *ex debito justitiæ*. But writs of error to reverse attainders in capital cases are only allowed *ex gratia*; and not without express warrant under the king's sign-manual, or at least by the consent of the attorney-general. These therefore can rarely be brought by the party himself, especially where he is attainted for an offence against the state: but they may be brought by his heir or executor after his death, in more favourable times; which may be some consolation to his family. But the easier and more effectual way is,

Lastly, to reverse the attainder by act of parliament. This may be and hath been frequently done upon motives of compassion, or perhaps the zeal of the times, after a sudden revolution in the government, without examining too closely into the truth or validity of the errors assigned. And sometimes, though the crime be universally acknowledged and confessed, yet the merits of the criminal's family shall after his death obtain a restitution in blood, honours, and estate, or some or one of them, by act of parliament; which (so far as it extends) has all the effect of reversing the attainder, without casting any reflections upon the justice of the preceding sentence. See **ATTAINDER**.

The effect of falsifying or reversing an outlawry is, that the party shall be in the same plight as if he had appeared upon the *capias*: and, if it be before plea pleaded, he shall be put to plead to the indictment; if, after conviction, he shall receive the sentence of the law; for all the other proceedings, except only the process of outlawry for his non-appearance, remain good and effectual as before. But when judgment, pronounced upon conviction, is falsified or reversed, all former proceedings are absolutely set aside, and the party stands as if he had never been at all accused; restored in his credit, his capacity, his blood, and his estates: with regard to which last, though they be granted away by the crown, yet the owner may enter upon the grantee, with as little ceremony as he might enter upon a disseisor.—But he still remains liable to another prosecution for the same offence: for, the first being erroneous, he never was in jeopardy thereby.

REVERSE of a medal, coin, &c. denotes the second or back side, in opposition to the head or principal figure.

REVERSION, in Scots law. See **LAW**, N^o clxix. 1—3.

REVERSION, in the law of England, has two significations; the one of which is an estate left, which continues during a particular estate in being; and the other is the returning of the land, &c. after the particular estate is ended; and it is further said to be an interest in lands, when the possession of it fails, or where the estate which was for a time parted with, returns to the granters, or their heirs. But, according to the usual definition of a reversion, it is the residue of an estate left in the granter, after a particular estate granted away ceases, continuing in the granter of such an estate.

The difference between a remainder and a reversion consists in this, that the remainder may belong to any man except the granter; whereas the reversion returns to him who conveyed the lands, &c.

In order to render the doctrine of reversions easy, we shall give the following table; which shows the present value of one pound, to be received at the end of any number of years not exceeding 40; discounting at the rate of 5, 4, and 3 *per cent.* compound interest.

Years	Value at 5 per ct.	Value at 4 per ct.	Value at 3 per ct.
1	.9524	.9615	.9709
2	.9070	.9245	.9426
3	.8638	.8898	.9151
4	.8227	.8548	.8885
5	.7835	.8219	.8626
6	.7462	.7903	.8375
7	.7107	.7599	.8131
8	.6768	.7307	.7894
9	.6446	.7026	.7664
10	.6139	.6756	.7441
11	.5847	.6496	.7224
12	.5568	.6246	.7014
13	.5303	.6006	.6809
14	.5051	.5775	.6611
15	.4810	.5553	.6419
16	.4581	.5339	.6232
17	.4363	.5134	.6050
18	.4155	.4936	.5874
19	.3957	.4746	.5703
20	.3769	.4564	.5537
21	.3589	.4388	.5375
22	.3418	.4219	.5219
23	.3255	.4057	.5067
24	.3100	.3901	.4919
25	.2953	.3757	.4776
26	.2812	.3607	.4637
27	.2678	.3468	.4502
28	.2551	.3335	.4371
29	.2429	.3206	.4243
30	.2314	.3083	.4120
31	.2204	.2965	.4000
32	.2099	.2851	.3883
33	.1999	.2741	.3770
34	.1903	.2636	.3660
35	.1813	.2534	.3554
36	.1726	.2437	.3450
37	.1644	.2343	.3350
38	.1566	.2253	.3252
39	.1491	.2166	.3158
40	.1420	.2083	.3066

The use of the preceding table.—To find the present value of any sum to be received at the end of a given term of years, discounting at the rate of 3, 4, or 5 *per cent.* compound interest. Find by the above table the present value of 1l. to be received at the end of the given term; which multiply by the number of pounds proposed, (cutting off four figures from the product on account of the decimals), then the result will be the value sought: For example, the present value of 10,000l.

Revivification
||
Re-union.

to be received 10 years hence, and the rate of interest 5 per cent. is equal to $.6139 \times 10,000 = 6139.0001$. or 6139l. Again, the present value of 10,000l. due in ten years, the rate of interest being 3 per cent. is $.7441 \times 10,000 = 7441$.

REVERSION of Series, in algebra, a kind of reversed operation of an infinite series. See SERIES.

REVIVIFICATION, in chemistry, a term generally applied to the distillation of quicksilver from cinnabar.

COMMISSION OF REVIEW, is a commission sometimes granted, in extraordinary cases, to revise the sentence of the court of delegates, when it is apprehended they have been led into a material error. This commission the king may grant, although the statutes 24 and 25 Hen. VIII. declare the sentence of the delegates definitive: because the pope, as supreme head by the canon law, used to grant such commission of review; and such authority as the pope heretofore exerted is now annexed to the crown by statutes 26 Hen. VIII. c. 1. and 1 Eliz. c. 1. But it is not matter of right, which the subject may demand *ex debito justitiæ*; but merely a matter of favour, and which therefore is often denied.

REVIEW, is the drawing out all or part of the army in line of battle, to be viewed by the king, or a general, that they may know the condition of the troops.

At all reviews, the officers should be properly armed, ready in their exercise, salute well, in good time, and with a good air; their uniform genteel, &c. The men should be clean and well dressed; their accoutrements well put on; very well sized in their ranks; the serjeants expert in their duty, drummers perfect in their beatings, and the fifers play correct. The manual exercise must be performed in good time, and with life; and the men carry their arms well; march, wheel, and form with exactness. All manœuvres must be performed with the utmost regularity, both in quick and slow time. The firings are generally 36 rounds; viz. by companies; by grand divisions; by sub-divisions; obliquely, advancing, retreating; by files; in the square; street firings, advancing and retreating; and lastly, a volley. The intention of a review is, to know the condition of the troops, see that they are complete and perform their exercise and evolutions well.

REVIEW is also applied to Literary Journals, which give a periodical view of the state of literature;—as the Monthly Review, the Critical Review, the British Critic, and Analytical Review, &c.

RE-UNION ISLAND, an island in the South Sea, discovered by the French on the 16th December 1773; lying, according to M. de Pages, in latitude $48^{\circ} 21'$, and longitude $66^{\circ} 47'$, the variation of the needle being 30° always towards north-west. The road and harbour are extremely good, and the latter from 16 to 8 fathoms deep at the very shore. The coast on each side is lofty, but green, with an abrupt descent, and swarms with a species of bustards. The penguins and sea-lions, which swarmed on the sands, were nowise alarmed at the approach of those who landed; from whence M. de Pages concluded that the country was wholly uninhabited. The soil produces a kind of grass, about five inches long, with a broad black leaf, and seemingly of a rich quality—but there was no vestige of a tree or

human habitation. See *Travels round the World* by M. de Pages, Vol. III. chap. viii. and ix.

REVOLUTION, in politics, signifies a change in the constitution of a state; and is a word of different import from *revolt*, with which it is sometimes confounded. When a people withdraw their obedience from their governors for any particular reason, without overturning the government, or waging an offensive war against it, they are in a state of revolt; when they overturn the government and form a new one for themselves, they effect a *revolution*.

That which is termed *the revolution* in Britain is the change which, in 1688, took place in consequence of the forced abdication of king James II. when the Protestant succession was established, and the constitution restored to its primitive purity. Of this important transaction, which confirmed the rights and liberties of Britons, we have endeavoured to give an impartial account under another article (see BRITAIN, n^o 281, &c). Of the rise and progress of the American revolution, which is still fresh in the memory of our readers, a large detail is given under the article AMERICA: But there are two other revolutions yet depending, of which some account will be expected in this place.

The Polish revolution, which, in all its circumstances, was perhaps the least exceptionable of any in the records of history, we have already traced to the period when the amiable king, over-awed by the arms of Russia, was obliged to undo his patriotic work, and give his sanction to the restoration of the old and wretched government (see POLAND). Since that period, Kosciusko's army has been completely defeated, himself made a prisoner, Warsaw taken, and the whole kingdom subdued by the powers combined against it. What will be the consequence of this success may perhaps be conceived, but the rumours of the day are various. At one time we are told, that Poland is to be no longer an independent state, but to be divided among the three great powers which formerly wrested from it some of its most valuable provinces. At another time, we hear of the disinterested intention of the Empress, to restore the king to his original authority; although she has, in the mean time, driven him from his capital, where she herself exercises sovereign power. And a third report says, that Stanislaus is to retire with a large pension, and a Russian prince to step into his throne. The first of these rumours we think much more probable than the other two: especially as it seems confirmed by the following letter sent from Grodno, on the 18th of January, by the unfortunate king to the British ambassador.

"MY DEAR GARDINER—The characters with which you and I have been invested seem to be now almost at an end. I do not expect to see you again, but it is of importance to me to bid you farewell; and this I do from the bottom of my heart. You will preserve a place in my heart till death; and I hope that at last we shall meet again, in a place where upright minds, according to my opinion, will be for ever united.

"Every thing belonging to the usual etiquette has been so much deranged and interrupted by my sad fate, that most probably neither you nor I will be able to fulfil the diplomatic customs.

"But be assured, that I love and honour your king and

Revolution and nation. This you will apprise them of. Be assured also, that I wish you should preserve an affection towards your friend. If I am able to speak to you no more, my picture will speak to you for me! (Signed) STANISLAUS AUGUSTUS, KING."

This shows, at least, the fate of the king; and leaving that of the kingdom to be ascertained by time, we proceed to fulfil a promise which we made respecting another revolution, to which all the nations of Europe are still looking with anxiety and alarm.

5
French.

When treating of France under a former article, we stated a few of the more striking historical facts which led to the commencement of the revolution; and we now come to trace the series of transactions which have marked its terrible career. In doing this, we shall compress our ideas as much as possible; and out of the endless variety of materials of which the public are in possession, we shall endeavour to extract a short and, if possible, a tolerably clear detail. For this purpose, however, it will be necessary that we begin, by stating the internal situation of France at the period immediately preceding the revolution, along with the more obvious political circumstances which contributed to the production of that event. The moral history of man is always more important than the mere recital of any physical occurrences that may take place in his lot. It is not the fall of a mighty monarch and the dispersion of his family; it is not the convulsion of empires, and the oceans of human blood which have been shed, that render the French revolution peculiarly interesting. Such events, however deplorable, are far from being without example in the history of mankind. In the populous regions of the east, where superstition and slavery have always prevailed, they are regarded as forming a part of the ordinary course of human affairs; because an intrepid and skilful usurper finds it easy to intimidate or ensnare millions of weak and credulous men. In Europe the case is very different; no adventurer can advance far without encountering thousands as artful and as daring as himself. Events are not the result either of blind hazard or of individual skill; conspiracies or plots produce little effect. Like other arts, the art of government has been brought to much perfection; and an established constitution can only be shaken by the strong convulsion produced by national passions and efforts. The wonderful spectacle which we are now to contemplate, is that of a mild and polished people becoming in an instant sanguinary and fierce; a well established government, celebrated for its dexterity and skill, overturned almost without a struggle; a whole nation apparently uniting to destroy every institution which antiquity had hallowed or education taught them to respect; a superstitious people treating the religion of their fathers with contempt; a long enslaved people, whose very chains had become dear to them, occupied in their public councils in the discussion of refined, and even visionary schemes of freedom: in short, 25,000,000 of persons suddenly treading under foot every sentiment and every prejudice that they themselves had once regarded as sacred and venerable.

6
France was formerly under a barbarous aristocracy.

Like the other nations of Europe, France was anciently governed by a barbarous aristocracy, whose different members were feebly united by the authority of a succession of kings destitute of power or influence. The nobles, within their own territories, enjoyed privi-

leges entirely royal: they made peace and war; they coined money; they were judges in the last resort; their vassals were their slaves, whom they bought and sold along with the lands; the inhabitants of cities, although freemen, were depressed and poor, depending for protection upon some tyrannical baron in their neighbourhood. At length, however, by the progress of the arts, the cities rose into considerable importance, and their inhabitants, along with such freemen of low rank as resided in the country, were considered as entitled to a representation in the states-general of the kingdom, under the appellation of *tiers état*, or *third estate*; the clergy and the nobles forming the two first estates. But the sovereign, having speedily become despotic, the meetings of the states general were laid aside. This absolute authority, on the part of the crown, was not acquired, as it was in England by the house of Tudor, by abolishing the pernicious privileges of the nobles and elevating the commons; but by skilful encroachments, by daring exertions of prerogative, and the use of a powerful military force. In France, therefore, the monarch was absolute, yet the nobles retained all their feudal privileges, and the ecclesiastical hierarchy did the same. The following was, in a few words, the state of that country during these two last centuries.

French Revolution.

The kingdom of France, previous to the revolution, was never reduced to one homogenous mass. It consisted of a variety of separate provinces acquired by different means; some by marriage, some by legacy, and others by conquest. Each province retained its ancient laws and privileges, whether political or civil, as expressed in their capitularies or conditions by which they were originally acquired. In one part of his dominions the French monarch was a count, in another he was a duke, and in others he was a king; the only bond which united his vast empire being the strong military force by which it was overawed. Each province had its barriers; and the intercourse betwixt one province and another was often more restrained by local usages than the intercourse of either with a foreign country. Some of the provinces, such as Bretagne and Dauphiné, even retained the right of assembling periodically their provincial states; but these formed no barrier against the power of the court.

7
Was never reduced into one homogenous mass.

The clergy formed the first estate of the kingdom in point of precedence. They amounted to 130,000. The higher orders of them enjoyed immense revenues; but the *curés* or great body of acting clergy seldom possessed more than about L. 28 Sterling a-year, and their *vicaires* about half that sum. A few of their dignified clergy were men of great piety, who resided constantly in their dioceses, and attended to the duties of their office; but by far the greater number of them passed their lives at Paris and Versailles, immersed in all the intrigues and dissipation of a gay and corrupted court and capital. They were almost exclusively selected from among the younger branches of the families of the most powerful nobility, and accounted it a kind of dishonour to the order of bishops for any person of low rank to be admitted into it. The lower clergy, on the contrary, were persons of mean birth, and had little chance of preferment. At the same time, we find several respectable exceptions to this last rule. The clergy, as a body, independent of the tithes, possessed a revenue arising from their property in land, amounting to

8
The clergy formed the first estate in the kingdom.

French
Revolution.

9
The nobi-
lity the se-
cond,

to four or five millions Sterling annually; at the same time they were exempt from taxation. The crown had of late years attempted to break through this privilege. To avoid the danger, the clergy presented to the court a free gift of a sum of money somewhat short of a million Sterling every five years.

The nobility was nominally the second order of the state, but it was in reality the first. The nobles amounted to no less than 200,000 in number. The title and rank descended to all the children of the family, but the property to the eldest alone: hence vast multitudes of them were dependent upon the bounty of the court. They regarded the useful and commercial arts as dishonourable, and even the liberal professions of the law and physic as in a great measure beneath their dignity, disdainful to intermarry with the families of their professors. The feudal system in its purity was extremely favourable to the production of respectable qualities in the minds of those who belonged to the order of the nobles; but the introduction of commerce has rendered its decline equally unfavourable to that class of men. Instead of the ancient patriarchal attachment between the feudal chieftain and his vassals, the nobility had become greedy landlords in the provinces, that they might appear in splendor at court and in the capital. There, lost in intrigue, sensuality, and vanity, their characters became frivolous and contemptible. Such of the French noblesse, however, as remained in the provinces, regarded with indignation this degradation of their order, and still retained a proud sense of honour and of courage, which has always rendered them respectable. The order of the nobles was exempted from the payment of taxes, although the property of some of them was immense. The estates of the prince of Conde, for example, were worth L. 200,000 a year, and those of the duke of Orleans nearly twice as much. The crown had indeed imposed some trifling taxes upon the noblesse, which, however, they in a great measure contrived to elude.

10
The parlia-
ment the
third,

Next to the nobles, and as a privileged order possessing a secondary kind of nobility of their own, we may mention the parliaments. These were large bodies of men, in different provinces, appointed as courts of law for the administration of justice. In consequence of the corruption of the officers of state, the members purchased their places, which they held for life; but the son was usually preferred when he offered to purchase his father's place. In consequence of this last circumstance, the practising lawyers had little chance of ever becoming judges. Courts thus constituted consisted of a motley mixture of old and young, learned and ignorant, men. Justice was ill administered. The judges allowed their votes in depending causes to be openly solicited by the parties or their friends. No wise man ever entered into a litigation against a member of one of these parliaments; no lawyer would undertake to plead his cause; it never came to a successful issue, and usually never came to any issue at all. After the states-general had fallen into disuse, the parliaments acquired a certain degree of political consequence, and formed the only check upon the absolute power of the crown. The laws, or royal edicts, before being put in force, were always sent to be registered in the books of the parliaments. Taking advantage of this, in favourable times and circumstances, they often delayed or refused to register the royal edicts, and presented remonstrances

against them. This was done under a kind of legal fiction: for they pretended that the obnoxious edict being injurious to the public happiness, could not be the will of the king, but must either be a forgery or an imposition by the ministers. These objections were got the better of, either by a positive order from the king, or by his coming in person and ordering the edict to be registered. The parliaments, however, often carried their opposition very far, even to the ruin of themselves and their families as individuals. This rendered them extremely popular with the nation, and enabled them to embarrass a weak administration. After all, however, the opposition of the parliaments was so feeble, that it was never thought worth while to abolish them entirely till towards the end of the reign of Louis XV. but they were restored as a popular measure at the beginning of the reign of Louis XVI.

The *tiers etat*, or commons, formed the lowest order of the state in France, and they were depressed and miserable in the extreme. To form a conception of their situation, it is necessary to observe that they bore the whole pecuniary burdens of the state: They alone were liable to taxation. An expensive and ambitious court; an army of 200,000 men in time of peace, and of twice that number in war; a considerable marine establishment, public roads and works, were all supported exclusively by the lowest of the people. To add to the evil, the revenues were ill collected. They were let out to farmers-general at a certain sum, over and above which they not only acquired immense fortunes to themselves, but were enabled to advance enormous presents to those favourites or mistresses of the king or the minister, by means of whom they procured their places. To raise all this money from the people, they were guilty of the cruellest oppression, having it in their power to obtain whatever revenue laws they pleased, and executing them in the severest manner. For this last purpose they kept in pay an army of clerks, subalterns, scouts, and spies, amounting to 80,000 men. These men were indeed detested by the king, whom they deceived and kept in poverty; by the people, whom they oppressed; and by the ancient nobility, as purse-proud upstarts. But the court of France could never contrive to manage without them. The peasants could be called out by the intendants of the provinces in what they called *corvées* to work upon the high roads for a certain number of days in the year, which was a source of severe oppression, as the intendant had the choice of the time and place of their employment, and was not bound to accept of any commutation in money. They were moreover subject to the nobles in a thousand ways. The nobles retained all their ancient manorial or patrimonial jurisdictions. The common people being anciently slaves, had obtained their freedom upon different conditions. In many places they and their posterity remained bound to pay a perpetual tribute to their feudal lords. Such tributes formed a considerable part of the revenue of many of the provincial nobles. No man could be an officer of the army, by a late regulation, who did not produce proofs of nobility for four generations. The parliaments, although originally of the *tiers etat*, attempted also to introduce a rule that none but the noblesse should be admitted into their order. In such a situation, it will not be accounted surprising that the common people of France were extremely superstitious

French
Revolution.

tious and ignorant. They were, however, passionately devoted to their monarch, and whatever concerned him. In 1754, when Louis XV. was taken ill at Metz, the whole nation was truly in a kind of despair. The courier and his horse that brought the news of his recovery to Paris were both almost suffocated by the embraces of the people.

12
Despotic
power of
the king.

We have said that the French monarch was despotic. His power was supported by his army and by a watchful police, having in pay an infinite host of spies and other servants. In France no man was safe. The secrets of private families were searched into. Nothing was unknown to the jealous inquisition of the police. Men were seized by *lettres de cachet* when they least expected it, and their families had no means of discovering their fate. The sentence of a court of law against a nobleman was usually reversed by the minister. No book was published without the licence of a censor-general appointed by the court, and the minister was accountable to none but the king. No account was given of the expenditure of the public money. Enormous gratifications and pensions were given as the reward of the most infamous services. The supreme power of the state was usually lodged with a favourite mistress, and she was sometimes a woman taken from public prostitution. This was not indeed the case under Louis XVI. but it was nevertheless one of the misfortunes of his life that he was far from being absolute in his own family. Still, however, with all its faults, the French court was the most splendid and polished in Europe. It was more the resort of men of talents and literature of every kind, and there they met with more ample protection, than anywhere else. The court was often jealous of their productions, but they met with the most distinguished attention from men of fortune and rank; inasmuch that for a century past the French have given the law to Europe in all questions of taste, of literature, and of every polite accomplishment. The gay elegance that prevailed at court diffused itself through the nation; and amidst much internal misery, gave it to a foreigner the appearance of happiness, or at least of levity and vanity.

13
Splendour
of the court,
&c.14
Causes of
the Revolution.

Such as it was, this government had stood for ages, and might have continued, had not a concurrence of causes contributed to its overthrow. The inferior orders of clergy, excluded from all chance of preferment, regarded their superiors with jealousy and envy, and were ready to join the laity of their own rank in any popular commotion. The inferior provincial noblesse beheld with contempt and indignation the vices and the power of the courtiers, and the higher nobility wished to diminish the power of the crown. The practising lawyers, almost entirely excluded from the chance of becoming judges, wished eagerly for a change of affairs, not doubting that their talents and professional skill would render them necessary amidst any alterations that could occur. Accordingly, they were the first instruments in producing the revolution, and have been its most active supporters. The monied interest wished eagerly for the downfall of the ancient nobility. As for the great mass of the common people, they were too ignorant, too superstitiously attached to old establishments, and too much depressed, to have any conception of the nature of political liberty, or any hope of obtaining it. We have already stated the leading circum-

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stances which led to the French revolution (see FRANCE, French Revolution, n° 184, &c.); but there were other circumstances which contributed in an equal degree both to its commencement and its progress.

For 40 years the principles of liberty had been disseminated with eagerness in France by some men of great talents, as Rousseau, Helvetius, and Raynal, to whom the celebrated Montesquieu had led the way. Besides these, there was in France a vast multitude of what were called *men of letters*, or persons who gave this account of the manner in which they spent their time. All these were deeply engaged on the side of some kind of political reform. The men of letters in Paris alone are said to have amounted to 20,000. One of the last acts of the administration of the archbishop of Thoulouse was, on the 5th July 1788, to publish a resolution of the king in council, inviting all his subjects to give him their advice with regard to the state of affairs. This was considered as a concession of an unlimited liberty of the press; and it is scarcely possible to form an idea of the infinite variety of political publications which from that period diffused among the people a dissatisfaction with the order of things in which they had hitherto lived.

The established religion of France had for some time past been gradually undermined. It had been solemnly assailed by philosophers in various elaborate performances; and men of wit, among whom Voltaire took the lead, had attacked it with the dangerous weapon of ridicule. The Roman Catholic religion is much exposed in this respect, in consequence of the multitude of false miracles and legendary tales with which its history abounds. Without discriminating betwixt the respectable principles on which it rests, and the superstitious follies by which they had been defaced, the French nation learned to laugh at the whole, and rejected instead of reforming the religion of their fathers. Thus the first order in the state had already begun to be regarded as useless, and the minds of men were prepared for important changes.

The immense population of the city of Paris, amounting to upwards of 800,000 souls, rendered it an important engine in the hands of the conductors of the revolution. An overgrown capital has always proved dangerous to a government that is or attempts to be despotic, as appears from the history of ancient Babylon and Rome, as well as of modern Constantinople, of London under Charles I. and Paris under several of its kings.

We cannot here avoid mentioning a physical event, which assisted not a little in producing many of the convulsions attending the revolution, a general scarcity of grain, which occurred about that period. On Sunday the 13th of July 1788, about nine in the morning, without any eclipse, a dreadful darkness suddenly overspread several parts of France. It was the prelude of such a tempest as is unexampled in the temperate climates of Europe. Wind, rain, hail, and thunder, seemed to contend in impetuosity; but the hail was the great instrument of ruin. Instead of the rich prospects of an early autumn, the face of nature in the space of an hour presented the dreary aspect of universal winter. The soil was converted into a morass, the standing corn beaten into the quagmire, the vines broken to pieces, the fruit trees demolished, and unmelted hail lying in heaps like rocks of solid ice. Even the robust

U

forest.

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forest trees were unable to withstand the fury of the tempest. The hail was composed of enormous, solid, and angular pieces of ice, some of them weighing from eight to ten ounces. The country people, beaten down in the fields on their way to church, amidst this concussion of the elements, concluded that the last day was arrived; and scarcely attempting to extricate themselves, lay despairing and half suffocated amidst the water and the mud, expecting the immediate dissolution of all things. The storm was irregular in its devastations. While several rich districts were laid entirely waste, some intermediate portions of country were comparatively little injured. One of 60 square leagues had not a single ear of corn or a fruit of any kind left. Of the 66 parishes in the district of Pontoise, 43 were entirely desolated, and of the remaining 23 some lost two-thirds and others half their harvest. The isle of France, being the district in which Paris is situated, and the Orleannois, appear to have suffered chiefly. The damage there, upon a moderate estimate, amounted to 80,000,000 of livres, or between three and four millions Sterling. Such a calamity must at any period have been severely felt; but occurring on the eve of a great political revolution, and amidst a general scarcity throughout Europe, it was peculiarly unfortunate, and gave more embarrassment to the government than perhaps any other event whatever. Numbers of families found it necessary to contract their mode of living for a time, and to dismiss their servants, who were thus left destitute of bread. Added to the public discontent and political dissensions, it produced such an effect upon the people in general, that the nation seemed to have changed its character; and instead of that levity by which it had ever been distinguished, a settled gloom now seemed fixed on every countenance.

15
Attempt to
reduce the
power of
the crown
in spring
1789.

The spring of the year 1789 was a period of much political anxiety in France. The superior orders wished to reduce the power of the crown, but were jealous of their own privileges, and determined to retain them; while the popular philosophers and others were endeavouring to render them odious, and to rouse the people to a love of freedom. Still, however, the great body of the common people remained careless spectators of the struggle and unconscious of the approaching commotion. Such was their indifference, that few of them took the trouble even to attend and vote at the elections of the deputies to the states-general. In many places, where a thousand voters were expected, not fifty came forward; but such of them as did appear showed that a seed was sown which might one day rise into important fruits. In the instructions which they gave to their deputies, the British constitution was in general the model of what they wished their government to be. They demanded equal taxation, the abolition of *lettres de cachet* or arbitrary imprisonment, the responsibility of ministers, and the extinction of the feudal privileges of the nobles; but they wished that the whole three orders of the state should sit and vote in one house, well knowing that their nobility were not prepared to act the moderate part of a British house of lords. The nobles, on the contrary, although willing to renounce some of their pecuniary privileges, and to sacrifice the power of the crown, were most decisively resolved neither to surrender their feudal prerogatives nor the right of sitting in three separate assemblies; by means of which

each of the orders could easily resist the encroachments of the other two. Mr Neckar has been improperly censured for not deciding this last important question previous to the meeting of the states-general: but it must be observed, that the very purpose of calling that assembly was to overturn the unjust privileges of the higher orders through its medium, and without any direct interposition on the part of the ministers. Had the king positively decided in favour of three chambers, the nobles and the clergy would have retained all those ancient abuses established in their own favour, of which it was his wish to deprive them, and the crown and its prerogatives would have been the only objects of sacrifice. It was therefore thought safer to leave the *tiers état* to fight its own battle: nor was it yet imagined that the commons of France, depressed and poor, and dispersed by situation over a multitude of provinces, could ever unite in enterprises dangerous to the sovereign.

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The states had been summoned to meet at Versailles on the 27th of April, and most of the deputies arrived at that time; but the elections for the city of Paris not being concluded, the king deferred the commencement of their sessions till the 4th of May. During this period, the members, left in idleness, began to find out and form acquaintance with each other. Among others, a few members from Brittany (*Bretagne*) formed themselves into a club, into which they gradually admitted many other deputies that were found to be zealous for the popular cause, and also many persons who were not deputies. This society, thus originally established at Versailles, was called the *Comité Breton*; and was one day destined, under the appellation of the *Jacobin Club*, to give laws to France, and to diffuse terror and alarm throughout Europe. On the other side, the aristocratic party established conferences at the house of Madame Polignac, for the purpose, it is said, of uniting the nobles and the clergy.

16
States summoned to meet at Versailles.

An event occurred at this time which all parties ascribed to some malicious motive. In the populous suburb of St Antoine, a M. Reveillon carried on a great paper manufactory. A false report was spread that he intended to lower the wages of his workmen, and that he had declared bread was too good for them, and that they might subsist very well on potato-flour. A commotion was raised, he was burnt in effigy, and his house was thereafter burnt and pillaged by the mob, who were not dispersed till the military had been called in, and much carnage ensued. The popular party asserted that the commotion had been artfully excited by the party of the queen and the Count D'Artois, to afford a pretence for bringing great bodies of the military to the neighbourhood to overawe the states-general, or induce the king more decisively to resolve on assembling that body at Versailles, in preference to Paris, where they and the popular minister M. Neckar wished it to be held.

17
A popular riot in the suburb of St Antoine.

On the 4th of May the states-general assembled at Versailles. They commenced business by going in a solemn procession, preceded by the clergy, and followed by the king, according to ancient custom, to church, to perform an act of devotion. The nobles were arrayed in a splendid robe, and they and the higher clergy glittered in gold and jewels. The commons appeared in black, the dress belonging to the law. The assembly

18
The States General commence business at Versailles.

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assembly was thereafter opened by a short speech from the throne, in which the king congratulated himself upon thus meeting his people assembled; alluded to the national debt, and the taxes, which were severely felt because unequally levied; he took notice of the general discontent and spirit of innovation which prevailed, but declared his confidence in the wisdom of the assembly for remedying every evil. "May an happy union (added he) reign in this assembly; and may this epocha become ever memorable for the happiness and prosperity of the country. It is the wish of my heart; it is the most ardent desire of my prayers; it is, in short, the price which I expect from the sincerity of my intentions and my love for my people."

M. Barretin, the keeper of the seals, next addressed the assembly in a congratulatory and uninteresting speech. He was followed by the popular minister M. Neckar, who spoke for three hours. Though much applauded on account of the clear financial details which his speech contained, he encountered a certain degree of censure from all parties, on account of the cautious ambiguity which he observed with regard to the future proceedings of the states-general.

19
Their de-
bates and
inactivity.

Next day the three orders assembled separately. The deputies of the *tiers état* amounted to 600 in number, and those of the nobles and clergy to 300 each. During their first sittings much time was spent in unimportant debates about trifling points of form; but the first important question, that necessarily became the subject of their discussion, was the *verification of their powers*, or production of the commissions of the members, and investigation of their authenticity. The commons (*tiers état*) laid hold of this as a pretext for opening the grand controversy, whether the states-general should sit in one or in three separate chambers? They sent a deputation inviting the nobles and the clergy to meet along with them in the common hall for the purpose of *verifying their powers* in one common assembly. In the chamber of the clergy 114 members voted for the performance of this ceremony in the general assembly; and 133 against it. But in the more haughty order of the nobles, the resolution for the verification in their own assembly was carried by a majority of 188 against 47. The commons paid no regard to this. They were conducted by bold and skilful leaders, who discerned the importance of the point in contest, and resolved not to abandon it. Aware of the exigencies of the state, they knew that the crown was nearly verging upon bankruptcy; and that such were the deficiencies of the revenue that only a short delay was necessary to accomplish the absolute dissolution of the government. They suffered five weeks to pass away therefore in total inactivity. During this period proposals were made on the part of the ministry for a pacification between the three orders, and conferences were opened by commissioners from each. But no art could seduce the commons from their original purpose, or prevail with them to enter upon the business of the state.

20
Popularity
of the
Tiers Etat,
or com-
mons.

The nation had expected much from the assembling of the states-general, and learnt the news of their inaction with no small degree of concern. The *tiers état* was naturally popular, and the public censure could not readily devolve upon that favourite order. Moreover, from the first period of their assembling the commons made every effort to augment their own natural popu-

larity. They admitted all persons promiscuously into the galleries, and even into the body of their hall. No restraint was attempted to be laid upon the most vehement marks of popular applause or censure. Lists of the voters names were publicly taken and sent to Paris upon every remarkable occasion; and the members suddenly found themselves become, according to their political sentiments, the objects of general execration or applause. The new and bold notions of liberty that were daily advanced by the leaders of the *tiers état* were received with acclamation by their hearers. The capital became interested in the issue of every debate; and the political fervor was eagerly imbibed by the nation with that vivacity which is so peculiar to the French. The commons accused the nobles of obstinately impeding the business of the state, by refusing to verify their powers in one common assembly. The accusation was swallowed by the multitude, who saw not, or were unwilling to see, that the attack was made by their own favourite order. In the mean time the nobles became rapidly more and more unpopular. Their persons were insulted, new publications daily came forth, and were greedily bought up, which reviled their whole order, and represented them as an useless or pernicious body of men, whose existence ought not to be tolerated in a free state. Whoever adhered to them was branded with the odious appellation of *Aristocrate*. The clergy, from the influence of the parish *curés* or parsons, seemed ready to desert their cause. They were even opposed by a minority of their own body, which derived lustre from having at its head the duke of Orleans, the first prince of the blood. Still, however, the majority of the nobles remained firm; well aware, that if they once consented to sit in the same assembly, and to vote promiscuously, with the ambitious and more numerous body of the commons, their whole order, and all its splendid privileges, must speedily be overthrown.

The leaders of the commons saw the change that was taking place in the minds of men; and they at length regarded the period as arrived when they ought to emerge from their inactivity, and execute the daring project of seizing the legislative authority in their country. They declared that the representatives of the nobles and the clergy were only the deputies of particular incorporations whom they would allow to sit and vote along with themselves; but who had no title in a collective capacity to act as the legislators of France. For conducting business with more facility, they appointed 20 committees. In consequence of a proposal by the Abbé Sieyès, a final message was sent to the privileged orders requiring their attendance as individuals, and intimating that the commons, as the deputies of 96 out of every hundred of their countrymen, were about to assume the exclusive power of legislation. None of the nobles obeyed this summons; but three *curés*, Messrs Cefve, Ballard, and Jalot, presented their commissions, and were received with loud acclamations. They were next day followed by five more, among whom were Messrs Gregoire, Dillon, and Bodineau. After some debate concerning the appellation which they ought to assume, the commons, with such of the clergy as had joined them, solemnly voted themselves the sovereign legislators of their country under the name of the *National Assembly*. The result of the vote was no sooner declared, than the hall resounded

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21
Taking ad-
vantage of
this popu-
larity, they
seize the
legislative
authority;

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Revolution,
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with shouts from the immense concourse of spectators of "Vive le Roi et vive l'assemblée nationale," *Long live the king and the national assembly.* M. Bailly was chosen president for four days only, Messrs Camus and Pison de Galand secretaries, and the assembly proceeded to business.

22
And assert
their own
sovereignty.

Its first acts were decisively expressive of its own sovereignty. All taxes imposed without the consent of the representatives of the people were declared to be null and void; but a temporary sanction was given to the present taxes, although illegal, till the dissolution of the assembly and no longer. It was added, that "as soon as, in concert with his majesty, the assembly should be able to fix the principles of national regeneration, it would take into consideration the *national debt*, placing from the present moment the creditors of the state under the safeguard and honour of the French nation."

23
Majority of
the clergy
unite with
them.

The popular cause now gained ground so fast, that on the 19th of June a majority of the clergy voted for the verification of their powers in common with the national assembly, and they resolved to unite with them on the following day.

24
Fears of the
nobles.

Affairs were now come to a crisis, and the nobles perceived that they must instantly make a decisive stand, or yield up their cause as finally lost. Such was their alarm, that M. d'Espremenil proposed, at one of the sittings of their order, to address the king, intreating him to dissolve the states-general. Hitherto that prince had gone along with M. Neckar in favouring the popular cause in opposition to the aristocracy. But every art was now used to alarm his mind upon the subject of the late assumptions of power on the part of the commons, and these arts were at length successful. Repeated counsels were held; M. Neckar was absent attending a dying sister, and the king was prevailed upon to act agreeably to the advice of the leaders of the nobles. But the first measure which they adopted was so ill conducted as to afford little prospect of final success to their cause. On the 20th of June, when the president and members were about to enter as usual into their own hall, they found it unexpectedly surrounded by a detachment of the guards, who refused them admission, while the heralds at the same time proclaimed a royal session. Alarmed by this unforeseen event, the meaning of which they knew not, but apprehending that an immediate dissolution of the assembly was designed, they instantly retired to a neighbouring tennis-court, where, in the vehemence of their enthusiasm, they took a solemn oath "never to separate till the constitution of their country should be completed."

25
Royal session
proclaimed.

On the 22d a new proclamation intimated that the royal session, was deferred till the following day. It was now found that the assembly had been excluded from their hall merely because the workmen were occupied in preparing it for the intended solemnity. This information was ill calculated to excite favourable expectations of the measures about to be adopted at a royal session, ushered in by such circumstances of marked disrespect for the representatives of the people. The assembly, after wandering about in search of a place of meeting, at length entered the church of St Louis, and were immediately joined by the majority of the clergy, with their president, the archbishop of Vienne, at their head. Two nobles of Dauphiné, the marquis de Blagon and the count d'Agoult, presented their com-

26
The Assembly
meets
in the
church of
St Louis.

missions at the same time. Encouraged by these events, and by the applauses of surrounding multitudes, the assembly now expected with firmness the measures about to be adopted.

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The royal session was held in the most splendid form, but altogether in the style of the ancient despotism. Soldiers surrounded the hall. The two superior orders were seated, while the representatives of the people, left standing a full hour in the rain, were in no humour, when at last admitted, to receive with much complacency the commands of their sovereign. The king read a discourse, in which he declared null and void the resolutions of the 17th, but at the same time presented the plan of a constitution for France. It contained many good and patriotic principles, but preserved the distinction of orders, and the exercise of *lettres de cachet*; it said nothing about any active share in the legislative power to be possessed by the states-general, and was silent both about the responsibility of ministers and the liberty of the press. The king concluded by commanding the deputies immediately to retire, and to assemble again on the following day. He then withdrew, and was followed by all the nobles and a part of the clergy. The commons remained in gloomy silence on their seats. It was interrupted by the grand master of the ceremonies, who reminded the president of the intentions of the king. Instantly the vehement count de Mirabeau, starting from his seat, exclaimed with indignation, "The commons of France have determined to debate. We have heard the intentions that have been suggested to the king; and you, who cannot be his agent with the states-general, you who have here neither seat nor voice, nor a right to speak, are not the person to remind us of his speech. Go tell your master, that we are here by the power of the people, and that nothing shall expel us but the bayonet." The applause of the assembly seconded the enthusiasm of the orator, and the master of the ceremonies withdrew in silence.

27
Discourse of
the king

M. Camus then rose; and in a violent speech indignantly stigmatised the royal session by the obnoxious appellation of a *bed of justice*; he concluded by moving that the assembly should declare their unqualified adherence to their former decrees. This motion was followed by another, pronouncing the persons of the deputies inviolable. Both were supported by Messrs Pétion, Barnave, Glaizen, the Abbés Gregoire, Sieyes, and many others, and were unanimously decreed. The assembly therefore continued their sittings in the usual form. On the following day the majority of the clergy attended as members; and on the 25th the duke of Orleans, along with 49 of the deputies belonging to the order of nobles, joined them also. The remaining nobles, as well as the small minority of the clergy, now found themselves awkwardly situated. Whether on this account, or because their leaders had by this time formed a plan for carrying their point not by peaceable means but by the aid of a military force, the king, on the 27th, invited by a pressing letter both orders to join the commons. This request was immediately complied with, although many of the nobility disapproved of the measure.

29
Debates af-
ter the
king's de-
parture.

The situation of France was now become truly alarming. When the king retired from the assembly after the royal session, he was followed by more than 6000 citizens,

30
Alarming
situation of
France at
this period.

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Revolution,
1789.

citizens, from whom loud clamours and every mark of disapprobation broke forth. All Versailles was speedily in an uproar. M. Neckar had repeatedly solicited his dismissal, and the report of this had increased the popular clamour. The court was in consternation. The king probably discovered, with no great satisfaction, that his minister was more popular than himself. At six o'clock in the evening the queen sent for M. Neckar. When he returned from the palace, he assured the crowd that waited for him that he would not abandon them; upon which they retired satisfied. At the same time the news of the royal session had thrown the city of Paris into violent agitation. The peace of that capital was at this time endangered by a variety of causes. A dreadful famine raged through the land, which in a great city is usually most severely felt. This prepared the minds of men for receiving unfavourable impressions of their political state. Every effort was moreover made to disorganize the government, and produce a dislike to the ancient order of things. The press poured forth innumerable publications, filled with new and seducing, though generally impracticable, theories of liberty. These were distributed *gratis* among the bulk of the people of Paris, and dispersed in the same manner through the provinces. Philip duke of Orleans (presumptive heir to the crown failing the children and brothers of the king) is with good reason believed to have supplied this expence out of his more than royal revenues. In the gardens of the Palais Royale at Paris, which belonged to him, an immense multitude was daily assembled, listening from morning to night to orators who descanted upon the most violent subjects of popular politics. Many of these orators were suspected to be in his pay. It was even believed that his money found its way into the pockets of some of the most distinguished leaders in the national assembly.

31
Numerous
seditions
publica-
tions.

32
Seduction
of the mili-
tary.

But the government was, if possible, still more dangerously assaulted by the methods now generally used to seduce the military. Every officer of the French army belonged to the order of the nobles; and from that quarter, therefore, it might have been imagined that there was little danger. But this very circumstance became the means of disorganizing that great engine of despotism. As the soldiers could not avoid imbibing some of the new opinions, their own officers became the first objects of their jealousy; especially in consequence of that impolitic edict of Louis XVI. which required every officer to produce proofs of four degrees of nobility; and thus insulted, by avowedly excluding the private men from promotion. Perhaps with a view to what might happen, the instructions to the deputies of the *tiers état* had recommended an increase of the pay of the soldiers. And now at Paris every art was used to gain them to the popular cause. They were conducted to the Palais Royal, and were there caressed and flattered by the populace, while they listened to the popular harangues. These arts were successful. On the 23d of June they first refused to fire on the mob in a riot. Some of them were on the 30th reported to be

in confinement for this offence; a crowd instantly collected, and rescued them, the dragoons that were brought to suppress the tumult grounding their arms: a deputation of the citizens solicited of the assembly the pardon of the prisoners. The assembly applied to the king, who pardoned them accordingly.

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All these events, together with the tumultuous state of the capital, which was daily increasing, made it necessary for the king to call out the military force to restore, if possible, the public peace. That his intentions were pure, the then state of affairs will permit no man but a democrat to doubt; but the aristocracy, with the Count d'Artois at their head, were bringing forward other measures, which ultimately contributed to the ruin of themselves, the king, and the kingdom. Crowds of soldiers were collected from all parts of the kingdom around Paris and Versailles. It was observed, that these consisted chiefly of foreign mercenaries. Camps were traced out. Marshal Broglie, a tried veteran, was sent for and placed at the head of the army. The king was supposed to have entirely yielded to new counsels, and every thing bore the appearance of a desperate effort to restore the energy of the ancient government. This is the most important period of the French revolution; yet the specific designs of the leading actors have never been clearly understood. It was rumoured at the time, that Paris was to be subdued by a siege and bombardment; that the assembly was to be dissolved, and its leaders put to death. These are incredible exaggerations; but the crisis of French liberty was universally regarded as at hand, and also the existence of the national assembly as an independent body; or at least upon any other footing than that proposed by the king on the 23d of June.

An able and eloquent address to the king against the assembling of foreign troops in their neighbourhood was brought forward by Mirabeau, and voted by the assembly. The king properly replied, that the state of the capital was the cause of assembling the troops, and offered to transfer the states-general to Noyons or Soissons. "We will neither remove (exclaimed Mirabeau) to Noyons nor to Soissons; we will not place ourselves between two hostile armies, that which is besieging Paris and that which may fall upon us from Flanders or Alsace; we have not asked permission to run away from the troops; we have desired that the troops should be removed from the capital."

Thirty-five thousand men were now stationed in the neighbourhood of Paris and Versailles. The posts were occupied which commanded the city, and camps were marked out for a greater force. The Count d'Artois and his party regarded their plans as ripe for execution; and M. Neckar received a letter from the king, requiring him to quit the kingdom in 24 hours. That popular (A) minister took the route of Brussels on the following day, when his departure was made public. In his dismissal the popular, or as it was now called the *democratic*, party thought they saw the resolution adopted to accomplish their ruin. The assembly again addressed the throne; they requested anew the removal

33
The assembly
addressed
the king to
remove
them,
which is
refused.

34
They again
addressed the
king;

(A) Popular he certainly was; but he either had not fortitude and talents to execute his own plans, or acted a base part to his amiable master. From baseness we acquit him.

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Revolution,
1789.

35
And are
again re-
fused.

35
Decree of
the assem-
bly in con-
sequence.

36
Consterna-
tion in Pa-
ris on Nec-
kar's re-
treat.

37
Cruelty of
the Prince
De Lam-
besq.

38
Terror in
the city
universal.

of the troops, offering to be responsible for the public peace, and to proceed in a body to Paris to encounter personally every danger that might occur. But they were coolly told, that the king was the best judge of the mode of employing the troops, and that the presence of the assembly was necessary at Versailles. From a sovereign who doubtless recollected the proceedings of the long parliament of England, a different reply could not in reason be expected. On receiving it, however, it was instantly decreed, on the motion of the marquis de la Fayette, that the late ministry had *carried with them* the confidence of the assembly; that the troops *ought* to be removed; that the ministry are and shall be responsible to the people for their conduct; that the assembly persisted in all its former decrees; and that as it had taken the public debt under the protection of the nation, no power in France was entitled to pronounce the infamous word *bankruptcy*.

The city of Paris was thrown into deep consternation by the news of M. Neckar's retreat. His bust and that of the Duke d'Orleans were dressed in mourning, and carried through the streets. The royal Allemand, a German regiment, broke in pieces the busts, and dispersed the populace. The prince De Lambesq, grand ecuyer of France, was ordered to advance with his regiment of cavalry, and take post at the Thuilleries. Being a man of a violent temper, and enraged by the appearances of disapprobation which were visible around him, he furiously cut down with his sword a poor old man who was walking peaceably in the gardens. The consequences of this act of inhumanity were such as might have been expected; a shout of execration instantly arose; the cry *to arms* was heard; the military were assaulted on all sides; the French guards joined their countrymen, and compelled the Germans, overpowered by numbers, and unsupported by the rest of the army, to retire.

All order was now at an end, and as night approached an universal terror diffused itself through the city. Bands of robbers were collecting; and from them or from the foreign soldiery a general pillage was expected. The night passed away in consternation and tumult. It was found in the morning that the hospital of St Lazare was already plundered. The alarm bells were rung; the citizens assembled at the Hotel de Ville, and adopted a proposal that was there made, of enrolling themselves as a militia for general defence, under the appellation of the *national guard*. This day and the succeeding night were spent in tolerable quietness, without any attempt on the part of the army. On the morning of the memorable 14th of July, it was discovered that the troops encamped in the Champs Elisees had moved off, and an immediate assault was expected. The national guard now amounted to 150,000 men; but they were in general destitute of arms. They had assumed a green cockade; but on recollecting that this was the livery of the Count d'Artois, they adopted one of red, blue, and white. M. de la Salle was named commander in chief, officers were chosen, and detachments sent around in quest of arms. In the Hotel des Invalides upwards of 30,000 stand of arms were found, along with 20 pieces of cannon; a variety of weapons was also procured from the *garde meuble de la couronne*, and from the shops of armourers, cutlers, &c.

The celebrated fortress of the Bastile was an object

of much jealousy to the Parisians. At 11 o'clock in the morning, M. de la Rosiere, at the head of a numerous deputation, waited upon M. de Launay the governor, who promised, along with the officers of his garrison, that they would not fire upon the city unless they should be attacked. But a report was soon spread through Paris, that M. de Launay had, in a short time thereafter, admitted into the fortress a multitude of persons, and then treacherously massacred them. The cause of this piece of perfidy has never been explained. The fact itself has been denied; but it was attested at the time by the duke of Dorset, the British ambassador at the court of France. The effect of the report was, that a sudden resolution was adopted of assaulting the Bastile; an immense and furious multitude rushed into its outer, and soon forced their way into its inner courts, where they received and returned a severe fire for the space of an hour. The French guards, who were now embodied into the national guard, conducted the attack with skill and coolness: they dragged three waggons loaded with straw to the foot of the walls, and there set them on fire; the smoke of these broke the aim of the garrison, while it gave no disturbance to the more distant assailants. The besieging multitude pressed the attack with incredible obstinacy and vigour for the space of four hours; the garrison was in confusion; the officers served the cannon in person, and fired their muskets in the ranks; the governor, in despair, thrice attempted to blow up the fortress. A capitulation, when at last fought, was refused to the garrison, and an unconditional surrender took place. The governor, and M. de Losme Salbrai his major, a gentleman of distinguished humanity and honour, became victims of popular fury in spite of every effort that could be made for their protection; but the French guards succeeded in procuring the safety of the garrison. Only seven prisoners were found in the Bastile. A guard was placed in it, and the keys were sent to the celebrated M. Brissot de Warville, who a few years before had inhabited one of its caverns.

The remaining part of this eventful day was spent at Paris in a mixture of triumph and alarm. In the pocket of the governor of the Bastile a letter was found, encouraging him to resistance by the promise of speedy succours, written by M. de Fleisselles, the prevot de marchands, or chief city magistrate, who had pretended to be a most zealous patriot. This piece of treachery was punished by instant death; and his bloody head was carried through the city on a pole, along with that of M. de Launay. At the approach of night a body of troops advanced towards the city, at the Barriere d'Enfer. The new national guard hurried thither, preceded by a train of artillery, and the troops withdrew upon the first fire: barricadoes were everywhere formed, the alarm-bells were rung, and a general illumination continued during the whole of this night of confusion.

In the mean time, it was obvious that the new ministry were entering upon a difficult scene of action, where one false step might lead to ruin, and where their own plan of conduct ought to be maturely digested. Marshall Broglie was made minister of war, the baron de Breteuil president of finance, M. de la Galiezere comptroller-general, M. de la Porte intendant of the war department, and M. Foulon intendant of the navy;

French
Revolution,
1789.

39
The Bas-
tile attack-
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And fur-
rendered
uncondi-
tionally.

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A new mi-
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pointed.

French
Revolution,
1789.

42
Their situa-
tion diffi-
cult, and
their con-
duct bad.

navy; but these were only meant to act as official men, under the Count d'Artois, and the other leaders of the aristocracy. To these leaders there did not even remain a choice of difficulties; no resource was left but that of overawing by military power the national assembly and the capital, and of risking the desperate measure of a national bankruptcy, which the court had not formerly dared to encounter, and to avoid which it had convoked the states-general. No trace remains, however, of any attempt to put this criminal, but last resource, in execution. The evening after the departure of M. Neckar was spent by the court of Versailles in feasting and joy, as if a victory had been gained. The courtiers of both sexes went round among the soldiery, striving to secure their fidelity by caresses, largesses, and every species of flattering attention. The ministry not only failed to support the Prince de Lambesq in the post which he had been sent to occupy, but they suffered the whole of the 13th to pass in indecision, while the capital was in a state of rebellion, while an army was formally mustering within its walls, and the names of the principal nobility were put up in lists of proscriptions. They received the news of the capture of the Bastille with confusion and dismay, which were increased, if possible, by information given by Marshal Broglie, that the troops refused to act against Paris or the national assembly. In this perplexity they adopted the miserable device of concealing from the king the state of public affairs; and that unfortunate prince was thus perhaps the only person out of millions around him who remained ignorant of the convulsions in which his country was involved.

At length, at midnight, the Duke de Liancourt forced his way into the king's apartment, and told him of the revolt of his capital, of his army, and of the surrender of the fortress of the Bastille. The Count d'Artois, who was present, still attempted to retain the monarch under his fatal delusion; but the Duke de Liancourt turning round, exclaimed, "As for you, Sir, your life can only be saved by instant flight; I have seen with horror your name in the bloody list of the proscribed." Accordingly the Count, with the members of his short-lived administration and their adherents, fled to the frontiers. And thus an emigration commenced, the source of that terrible contest which has covered Europe with bloodshed and mourning. This ministry had, no doubt, many difficulties to contend against; but an accurate attention to their conduct excites a suspicion which, while it exculpates them from many intended crimes that have been laid to their charge, at the same time does little honour to their talents. It is this, that they had come into office without having formed any clear plan of conduct; that they were men acting without decision and at random, and consequently became the sport of those events which they wanted skill and vigour to direct or controul. By their introduction into office, and their misconduct while in it, the royal authority fell prostrate before the popular party in the national assembly. The nobles and the clergy still remained, but confounded in one assembly with the more numerous order of the *tiers état*; and no longer rallying round a throne that was too feeble to afford protection, they soon yielded to that fierce and levelling spirit of democracy that now rose around them.

But the person of the monarch was still beloved.— Early next morning the king went to the assembly, but with none of the usual solemnities. He "regretted the commotions of the capital, disavowed any knowledge of an intention against the persons of the deputies, and intimated that he had commanded the removal of the troops." A deep and expressive silence prevailed for a few moments; this was succeeded by vehement and universal shouts of applause. The king arose to depart, and instantly the whole assembly crowded around, and attended him to his palace. The queen appeared at a balcony with the dauphin in her arms; the music played the pathetic air of *Où peut-on être mieux qu'au sein de sa famille*. The enthusiasm of loyalty communicated itself to the surrounding multitudes, and nothing was heard but acclamations of joy.

On the following day, the king declared his resolution to visit the city of Paris in person. Accordingly that prince, who never wanted personal courage, however deficient he might be in political steadfastness, set out, attended by some members of the assembly and by the militia of Versailles. He was met by the celebrated M. de la Fayette, at the head of a body of the national guard, of which he had now been chosen commander in chief. M. Bailly, in whose person the ancient office of mayor of Paris had been revived, received the king at the gates, and delivered to him the keys. All this while no shout was heard from the crowd of innumerable spectators but that of *Vive la nation*. The king advanced to the Hotel de Ville, where the new cockade was presented to him, which he put on, and presented himself with it at a window. At the sight of this badge of patriotism an universal shout of *Vive le Roi* burst forth from every quarter; and he returned to Versailles amidst general triumph and applause.

Much confusion still prevailed in the capital; but there was more appearance of regularity than could have been expected at the conclusion of such important events. This arose from a casual concurrence of circumstances. To conduct with ease the elections to the states-general, Paris had been divided into 60 districts, each of which had a separate place of meeting. The people did not elect the members to the states-general; but they chose delegates, who, under the name of electors, voted for the members. At the commencement of the disturbances, the electors, at the request of their fellow-citizens, assumed a temporary authority; of which, however, they were soon weary, and as soon as possible procured the public election of 120 persons as municipal officers for the government of the city. The citizens having got the habit of assembling in their districts, grew fond of it: they assembled frequently, made rules for their own government, and sent commissioners to communicate with other districts. The tumultuous nature of these meetings, and the vehemence of debate which prevailed in them, will best be conceived from the ludicrous contrivance of one of their presidents, who stationed a drummer at the back of his chair, and when the confusion and noise became altogether unmanageable, gave the signal for beating the drum, which speedily overpowered every other noise. These meetings, however, gradually ripened into clubs, in which much dexterity and intrigue were exerted.

The whole of the late ministry escaped excepting M. Foulon.

French
Revolution,
1789

43
The king
goes to the
assembly,

44
And next
day visits
the city of
Paris in
person;

45
In which
much con-
fusion still
prevailed.

French Revolution, 1789. Foulon. His character, it may well be imagined, was extremely unpopular; for he is said to have asserted, that he would "make the people of Paris eat hay."

46 He had retired to the country, but was seized by his own vassals, and brought to Paris with a bundle of hay tied to his back. In spite of every effort made by M. M. Bailly and Fayette to procure him a fair trial at least, he was carried to the *Place de Greve*, and hanged at a lamp-iron by the enraged multitude. His son-in-law M. Berthier, attempting to defend himself against a similar fate, fell, covered with wounds. Their heads were carried round on poles; and thus the populace became habituated to the sight of blood and murder: they were even taught by popular songs to glory in such actions, and particularly by the well-known song *Ca-ira*.

47 M. Neckar returns, and the immediate consequences of it. In consequence of an invitation from the king, M. Neckar returned to France. He was received by the assembly with great applause, and in Paris with infinite solemnity and triumph. He here, however, committed a political error that made some noise. In deploring the late excesses and murders, and taking notice of the arrest of M. Bezenval, an officer of the Swiss guards, he requested of the electors at the Hotel de Ville, in a solemn harangue, that the past should be forgotten; that proscriptions should cease, and a general amnesty be proclaimed. In a moment of enthusiasm this was agreed to, and the electors decreed what unquestionably exceeded their powers. The districts of Paris were instantly in commotion; the electors alarmed, declared that they only meant that "henceforth the people would punish no man but according to law;" and, at the same time, to prove that they themselves were free from ambition, they formally renounced all their own powers. The assembly took up the question. Mess. Lally, Tolendal, Mounier, Clermont, Tonnerre, Garat junior, and others, declared that no person ought to be arrested without a formal accusation. While Mess. Mirabeau, Robespierre, Barnave, and Gleizen, alleged, on the contrary, that the people were entitled to lay hold of any man who had publicly appeared at the head of their enemies. The debate ended, by admitting the explanation of the electors, and by a declaration that it was the duty of the assembly to see justice executed in all cases.

48 The commotions, &c. of the capital reach to the provinces. The commotions and enthusiasm of the capital were speedily communicated to the provinces. In every quarter the people seized upon all the arms that could be found, and the military uniformly refused to act against them. Many acts of outrage were committed in Brittany, at Strasbourg, in the Lionnois, and elsewhere, in which the nobility were the sufferers. The mischiefs that occurred were usually magnified at a distance; but that very circumstance was an additional evil. For example: It was stated in the National Assembly that M. de Mesmay, lord of Quincey, invited a number of patriots, among whom were the officers of a neighbouring garrison, to a splendid entertainment at his house, to celebrate the happy union of the three orders: That in the midst of the feast the master of the house contrived to withdraw unnoticed, and to set fire to a train previously laid, which communicated with a quantity of gunpowder in the cellars, in consequence of which the whole company, by a sudden explosion, were blown into the air. It was found on inquiry,

that there was not one word of truth in the whole story. But before this inquiry could be made, all France had resounded with accounts of the pretended bloody tragedy; and the whole nobility of the kingdom suffered in a less or greater degree, from the prejudices excited by this unhappy report, the origin of which has never been well explained. It would be vain to state all the idle rumours to which at this time the blind credulity of the multitude gave currency. At one time, the Aristocrats were cutting down the green corn, at another time they were burying flour in common sewers, or casting loaves into the Seine. One report was no sooner proved to be false than another arose, and the whole nation was agitated by suspicion and alarm. The National Assembly were engaged in framing their celebrated declaration of the rights of man, which was to form the basis of the new constitution, when the alarming accounts, received from all quarters, of the state of anarchy into which the kingdom was falling, obliged them suddenly to turn their attention to objects of practical necessity. The privileged orders found themselves become the objects of universal jealousy and hatred; and that something must instantly be done to save their families and property, which were menaced on every side with persecution and pillage. Regarding the popular torrent as now become irresistible, to save something they resolved to sacrifice a part.

49 On the afternoon sitting of the 4th of August, the Viscount de Noailles, seconded by the Duke d'Aguillon, opened one of the most important scenes in the French Revolution, or in the history of any country. These noblemen stated, that the true cause of the commotions which convulsed the kingdom existed in the misery of the people, who groaned under the double oppression of public contributions and of feudal services. "For three months (said M. de Noailles) the people have beheld us engaged in verbal disputes, while their own attention and their wishes are directed only to things. What is the consequence? They are armed to reclaim their rights, and they see no prospect of obtaining them but by force." He therefore proposed to do justice as the shortest way of restoring tranquillity, and for that purpose to decree, that henceforth every tax should be imposed in proportion to the wealth of the contributors, and that no order of the state should be exempted from the payment of public burdens; that feudal claims should be redeemed at a fair valuation; but that such claims as consisted of personal services on the part of the vassal should be abolished without compensation, as contrary to the imprescriptible rights of man. The extensive possessions of the noblemen who made these proposals added much lustre to the disinterested sacrifice which they offered. Their speeches were received with the most enthusiastic applauses by the Assembly and the galleries, and their proposals were decreed by acclamation without a vote. No nation is so much led by the influence of sudden emotions as the French. The patriotic contagion now spread fast through every breast, and a contest of generosity ensued. The hereditary jurisdictions possessed by the nobles within their own territories were next sacrificed. All places and pensions granted by the Court were suppressed, unless granted as the reward of merit or of actual services. The game laws, which condemned the husbandman, under severe penalties, to leave his property

French Revolution, 1789.

Viscount de Noailles and Duke d'Aguillon propose that

50 The taxes should be in proportion to the wealth of the contributors.

51 The game-law, &c. abolished.

French
Revolution,
1789.

52
Many an-
cient privi-
leges are
voluntarily
surrender-
ed.

ty a prey to infinite multitudes of animals reserved for pastime, had always been numbered among the severe grievances of the French peasantry. These were therefore renounced, along with the exclusive rights of rabbit-warrens, fisheries, and dovecotes. The sale of offices was abolished, and the fees exacted from the poor, together with the privilege of holding a plurality of livings, were relinquished by the clergy. The deputies of the *Pais d'Etat*, or privileged provinces, with the deputies of Dauphiné at their head, next came forward, and offered a surrender of their ancient privileges, requesting that the kingdom might no longer remain parcelled out among Dauphinois, Bretons, Provençaux, &c. but that they should all form one great mass of French citizens. They were followed by the representatives of Paris, Marseilles, Lyons, Bourdeaux, Strasbourg, &c. who requested leave to renounce all their separate privileges as incorporations, for the sake of placing every man and every village in the nation upon a footing of equality. Thus the Assembly proceeded, till every member had exhausted his imagination upon the subject of reform. To close the whole, the Duc de Liancourt proposed that a solemn *Te Deum* should be performed, that a medal should be struck in commemoration of the events of that night; and that the title of RESTORER OF GALLIC LIBERTY should be bestowed upon the reigning monarch. A deputation was accordingly appointed to wait upon the king, respectfully to inform him of these decrees.

53
Tithes and
revenues of
the clergy
taken a-
way.

Several succeeding days were necessary to form into laws the decrees of the 4th August, and committees were appointed to make out reports for that purpose. One of these reports having included the tithes and revenues of the clergy among the abuses that were to be done away, and having proposed in lieu of them to grant a certain stipend to the different ministers of religion to be payable by the nation, the clergy attempted to make a stand in defence of their property, and violent debates ensued. In these they were ably supported by the Abbé Sieyès: but as the clergy had formerly deserted the nobles, so they were now in their turn abandoned to their fate by the hereditary aristocracy. The popular party had long regarded the wealth of the church as an easy resource for supplying the wants of the state.—Never was there a more complete proof of the influence of opinion over the affairs of men. The Catholic clergy of France, though possessed of more property than they enjoyed at the time when princes took up arms or laid them down at their command, now found so few defenders, that they were terrified into a voluntary surrender of all that they and their predecessors had possessed for ages. In their overthrow, they scarcely enjoyed even the barren honour of having fallen the last of those privileged orders that so long had ruled over this ancient kingdom. They and the nobles, and the king, still possessed their former titles and nominal dignity; but all of them were now subdued, and at the mercy of the commons of France, who speedily dismissed them at their pleasure.

54
A new mi-
nistry ap-
pointed,

As a short season of tranquillity in the Court and the National Assembly succeeded these great popular sacrifices, the King laid hold of it as a fit opportunity for the appointment of a new ministry. They consisted of the Archbishop of Vienne, the Archbishop of Bourdeaux, M. Neckar, the Count de St Priest, Count de

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Montmorin, the Count de la Luzerne, and the Count de la Tour du Pin Paulin. M. Neckar, as minister of finance, having stated the distressed situation of the revenue, presented the plan of a loan of thirty millions of livres. But M. Mirabeau, from a spirit of rivalry, as it would seem, to M. Neckar, prevailed with the Assembly to alter and to narrow the conditions of it in such a degree that very few subscribers were found, and the loan could not be filled up. This failure involved the Assembly in a considerable degree of unpopularity; in consequence of which they allowed M. Neckar to prescribe his own terms for the purpose of obtaining a loan of eighty millions. But the happy instant of public confidence had been allowed to pass away, and this loan was never more than half filled up. Recourse was next had to patriotic contributions; and great numbers of gold rings, silver buckles, and pieces of plate, were presented to the Assembly. The Royal family themselves sent their plate to the mint, either to give countenance to these donations, or, as M. Neckar has since asserted, through absolute necessity, for the purpose of supporting themselves and their family. The confusion into which the nation had been thrown by the late events had produced a suspension of the payment of all taxes. There existed, in fact, no efficient government; and if society escaped entire dissolution, it was merely in consequence of those habits of order which are produced by a state of long continued civilization. The business of government could not be transacted without money, and many vain efforts were made by the ministry to procure it. At length M. Neckar was driven to the desperate resource of proposing a *compulsory loan*, or that every individual possessed of property should advance to the state a sum equal to one-fourth of his annual income. This bold proposition was supported by Mirabeau, and adopted by the Assembly; but it does not appear to have ever been effectually executed.

French
Revolution,
1789.

55
Who find
great dif-
ficulty in
raising mo-
ney.

In the mean time, the Assembly was busily occupied in framing the celebrated declaration of the *Rights of Man*, which was afterwards prefixed to the new constitution. This was followed by the discussion of a point of much delicacy and difficulty; viz. What share of legislative authority the king ought to possess under the new constitution; whether an absolute negative or *veto*, or a suspensive *veto*, or no *veto* at all? This question operated like a touchstone for trying the sentiments of every person; and the assembly, consisting of 1200 men, was now seen to arrange itself into two violent contending factions. The debates were vehement and tumultuous, and continued for many days. As the assembly sat in public, and as multitudes of people of all descriptions were admitted into the galleries, and even into the body of the hall among the members, many indecent scenes took place in consequence of the interference of the spectators to applaud or censure the sentiments which were delivered. Thus the public at large became speedily interested in the discussion; the city of Paris took a side in opposition to the *veto*, and the whole empire was thrown into agitation by new and speculative questions. The distinguished place which France holds among the nations of Europe rendered these singular events and discussions the object of universal attention. The contagious love of novelty spread rapidly abroad, and gave rise to that well-founded jealousy on the part of the monarchs of Europe, which

56
Discussion
on the
*Rights of
Man*.

57
And the
king's *veto*.

X

was

French
Revolution,
1789.

was speedily to burst forth in a bloody tempest.—In the present case, the people of Paris became most eagerly interested. Rumours of plots were spread through the country, and a new storm was obviously gathering, when the question was thus got quit of. M. Mounier remarked, that the executive power could possess no negative against the decrees of the present assembly, which had been nominated by the nation with supreme powers for the express purpose of framing a constitution, which was to remain binding over all orders of men in the state; and with regard to future legislatures, the king declared by a message, that he wished to possess no more than a *suspensive veto*. It is remarkable that the popular Mirabeau concluded a speech in favour of the absolute *veto* of the crown with these words, "That it would be better to live in Constantinople than in France, if laws could be made without the royal sanction." This political adventurer is, however, accused of having taken care to circulate in Paris a report that he had opposed the *veto* with all his influence; and to give credit to the story, he is said to have quitted the assembly just before the division, that his vote might not appear on record against it.

58
Discussion
about the
legislative
body, whe-
ther it
ought to
consist of
one or two
chambers.

In the debates about the *veto* the month of August was spent; and in the beginning of September a new constitutional question was presented to the assembly by one of its numerous committees. This was, Whether the legislative body ought to consist of one or of two chambers? Mounier, Lally, Tollendal, Clermont Tonnerre, and others, who were zealous lovers of freedom upon what were then accounted moderate principles, supported eagerly the idea of establishing two independent chambers in imitation of the British constitution; but they were deserted both by the democratic and aristocratic parties. The first of these regarded an upper house or senate as a refuge for the old aristocracy, or as the cradle of a new one; while the higher nobles and clergy feared lest such an arrangement might prevent the future re-establishment of the ancient division into three orders. Of 1000 members who voted, only 89 supported the proposal for dividing the legislature into two chambers.

59
The royal
sanction
granted to
the decrees
of the 4th
August,
&c.

Soon after this, the king gave his sanction to the important decrees of the 4th of August, but not without some hesitation, and expressing doubts of the wisdom of some of them in a letter to the assembly. At the same time the *inviolability* of the person of the monarch was decreed, the indivisibility of the throne, and its hereditary descent from male to male in the reigning family.—But we shall not here attempt to enter into a detail of the various articles of the new constitution as connected with the circumstances under which they became the subject of debate. We shall only state those more remarkable circumstances which tend to ascertain the peculiar changes which the sentiments of the nation underwent in the progress of a revolution the most remarkable that occurs in human history.

60
State of
parties in
Paris.

In consequence of the debates upon the questions of the *veto* and the two chambers, the minds of parties had become much irritated. Paris wore the same threatening aspect that it had done in the months of June and of July preceding; and every thing seemed tending towards an important crisis. The aristocratic party accused their antagonists of a design to excite new insurrections; and the charge was retorted, by cir-

culating a report that a plot for conveying the king to Metz was already ripe for execution.

From the period of the defection of the French guards, who were now in the pay of the capital, the protection of the royal family had been entrusted to the militia or national guard of Versailles, together with the regiment of the *gardes du corps*, which was composed entirely of gentlemen. Upon the circulation of the report of the intended flight of the king, the French guards began to wish to be restored to their ancient employment of attending his person, for the purpose of preventing any attempt of this nature. This idea was eagerly cherished by the capital; and, in spite of every effort used by M. de la Fayette, the obvious appearance of approaching disturbances could not be prevented. The popular party saw the advantages which they would derive from placing the assembly and the king in the midst of that turbulent metropolis which had given birth to the revolution, and upon the attachment of which they could most securely depend. Every encouragement was therefore given by the most active leaders of what was now called the *Democratic* party to the project of establishing the court at Paris. The ministry were under no small degree of alarm; and the count d'Estaing, who commanded the national guard of Versailles, requested the aid of an additional regiment. The regiment of Flanders was accordingly sent for: its arrival caused no small degree of anxiety; and every effort was instantly made to gain over both officers and soldiers to the popular cause.

On the first of October the garde du corps, probably for the purpose of ingratiating themselves with the newly arrived regiment, and perhaps to attach them more steadily to the royal cause, invited the officers of the regiment of Flanders to a public entertainment. Several officers of the national guard, and others of the military, were invited. The entertainment was given in the opera house adjoining to the palace; several loyal toasts were drank: but it is asserted, that when the favourite popular toast *The Nation* was given, it was rejected by the gardes du corps. In ordinary cases, such a trifling circumstance as this, or even any other of the transactions of a night of festivity, would justly be regarded as unworthy of notice in recording the more remarkable events in the history of a great nation; but such was now the singular state of affairs, that the most trivial occurrences were instrumental, by their combination, in the production of important consequences. The queen, having seen from a window of the palace the gaiety which prevailed among the military, prevailed with the king, who was just returned from hunting, to visit them along with herself and the dauphin. Their sudden appearance in the saloon kindled in an instant the ancient enthusiasm of French loyalty. The grenadiers of the regiment of Flanders, along with the Swiss chasseurs, had been admitted to the desert; and they, as well as their officers, drank the health of the King, Queen, and Dauphin, with their swords drawn. The royal family having bowed with politeness to the company, retired.—Of all nations, the French are most liable to the influence of sudden impressions: the music played the favourite air, *O Ricard! O mon Roi! l'univers l'abandonne*, "O Richard! O my king! the world abandons thee." In the eagerness of loyalty,

French
Revolution,
1789.

61
Consequen-
ces of their
mutual jea-
lousies.

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Revolution,
1789.

loyalty, the national cockade, which had been adopted by some of the gardes du corps, was thrown aside, and white cockades were supplied as quickly as they could be made by the ladies of the court.

When these events were next day reported at Paris, accompanied by a multitude of exaggerations, they gave rise to the most violent alarm. The capital was at that time suffering all the horrors of famine; and in such a situation, the news of a feast which others have enjoyed, seldom gives much pleasure to hungry men. To the former report of an intended flight on the part of the royal family, it was now added, that a counter-revolution was speedily to be attempted by force of arms; and that the present scarcity was artificially created by the court for the purpose of reducing the people to submission. Their aristocratic antagonists have since asserted, that the famine was indeed artificial; but that it was created by a portion of the violent party in the national assembly, which was then denominated the *Cabal*, whose object was to excite commotions as the means of procuring an opportunity of setting the duke of Orleans at the head of the state, either as regent, or in some other form. To this last party Mirabeau is said to have belonged.

For four days no notice was taken in the assembly of what had passed at the entertainment given by the gardes du corps. On the 5th of October M. Petion mentioned it for the first time, and a violent debate ensued; during which Mirabeau rose and exclaimed, "Declare that the king's person *alone* is sacred, and I myself will bring forward an impeachment;" thereby alluding to the conduct of the queen. While this debate was proceeding at Versailles, the city of Paris was in commotion. A vast multitude of women of the lowest rank, with some men in women's clothes, had assembled at the *Hotel de Ville*, and were calling aloud for arms and bread. They resolved to proceed instantly to Versailles to demand bread from the king and from the national assembly. La Fayette opposed them in vain; for his own soldiers refused to turn their bayonets against the women. Upon this one Stanislaus Maillard, who had distinguished himself at the taking of the Bastille, offered himself as a leader to the insurgents. He had the address to prevail with them to lay aside such arms as they had procured; and he set out for Versailles about noon with as much order among his followers as could well be expected from such an assemblage. Either because the passion for going to Versailles had suddenly become too infectious to be resisted, or because the multitude already gone thither was now accounted dangerous, the mayor and municipality of Paris thought fit to give orders to La Fayette instantly to set out for that place at the head of the national guard.

In the mean time, Maillard approached Versailles with his tumultuous troop; he arranged them in three divisions, and persuaded them to behave with tolerable decency. The king was hunting in the woods of Mendon when he was informed of the arrival of a most formidable band of women calling aloud for bread. "Alas! (replied he) if I had it, I should not wait to be asked." Maillard entered the assembly accompanied by a deputation of his followers to state the object of their journey. The assembly, to pacify them, sent a deputation of their own number along with them to

lay their complaints before the king. His majesty received the whole with great politeness, and readily agreed to go into any measures for the supply of the capital that could be suggested. The report of this behaviour had such an effect upon the multitude collected around the palace, that they began to disperse; but they were speedily succeeded by another croud not less numerous. A sudden resolution of flight seems now to have been proposed by the court; for the king's carriages were brought to the gate of the palace which communicates with the Orangry: but the national guard of Versailles refused to allow them to pass, and the king himself refused to remove, or to allow any blood to be shed in his cause.

La Fayette with his army at length arrived about 10 o'clock at night, and found the assembly in a very unpleasant situation. Their hall and galleries were crowded by the Parisian fish-women and others of the mob, who, at every instant, interrupted the debates. La Fayette waited upon the king, and informed him of the proceedings of the day, planted guards in every quarter; and after a scanty banquet had been procured for the multitude, he prevailed with the assembly to close their sitting for the night. In this last part of his conduct M. La Fayette has been much censured, and probably not without reason; for it could scarcely be expected that such a night would be spent in peace by the immense assemblage of turbulent characters that were now brought together. All was quiet, however, till about six in the morning of the 6th, when a great number of women and desperate persons rushed forward to the palace, and attempted to force their way into it. Two of the gardes du corps were killed; the croud ascended the stair-case leading to the queen's apartment, but were bravely resisted by M. Miemandre a sentinel, who gave the alarm, and defended his post till he fell covered with wounds, of which, however, he afterwards fortunately recovered. The ruffians, reeking with his blood, rushed into the chamber of the queen, and pierced with bayonets and poniards the bed whence this persecuted woman had but just time to fly almost naked, and, through ways unknown to the murderers, had escaped to seek refuge at the feet of the king, who was already alarmed, and had gone to seek her.

The tumult became more violent every moment, and the sudden death seemed to threaten the royal family; but La Fayette was by this time at the head of his troops, whom he beseeched earnestly to save the gardes du corps from massacre. In this he was successful; some that had been taken prisoners were surrounded by the grenadiers of the French guards who protected them, and the retreat of the whole corps was easily secured. The croud was speedily driven from the different quarters of the palace, which they were already beginning to pillage; and the royal family ventured to show themselves at a balcony. A few voices now exclaimed, *Le Roi à Paris*, "the King to Paris." The shout became general; and the king, after consulting with La Fayette, declared that he had no objection to take up his residence at Paris, provided he was accompanied by the queen and his children. When the proposal was reported to the assembly, the popular leaders expressed much satisfaction. They ordered a deputation of 100 members to attend the king thither; they voted the national assembly inseparable from the king. His majesty

French
Revolution,
1789.

64

La Fayette
with his
army
reaches
Versailles
at night.

65

Desperate
attempt on
the queen.

66

The royal
family
saved
by Fayette,

61
A multi-
tude of
women of
the lowest
rank march
to Ver-
sailles,

63
And send
a depu-
tation to
the assem-
bly.

French
Revolution,
1789.

67
Are car-
ried priso-
ners to Pa-
ris.

68
Triumph
of the po-
pular par-
ty.

69
The assem-
bly holds
its first ses-
sion at Pa-
ris.

set out at two o'clock a prisoner in the custody of the mob. Two gentlemen were selected from his body guard, and, with all the parade of an execution, beheaded in the court of his palace. Their heads were stuck upon spears, and led the procession; whilst the royal captives who followed in the train, and beheld this spectacle, were conducted so slowly, that a short journey of twelve miles was protracted to six hours. The king, the queen, and their children, were lodged in the old palace of the Louvre, while Monsieur went to reside at the Luxemburg. The city was illuminated, and the evening spent in triumph by the Parisians.

The removal of the king to Paris was regarded as a triumph by the popular party. The higher order of nobles considered it as completely ruinous to their hopes; and even many men of talents, such as Mounier and Lally Tollendal, whom we cannot avoid regarding as friends to the popular cause in its out-set, now regarded every prospect of attaining a happy constitutional freedom as at an end, as the national representatives must be for ever exposed to the insults, and overawed by the influence, of a turbulent capital. Many members of the assembly took refuge in foreign countries, and used every effort to excite the other nations of Europe to hostility against France. As the duke of Orleans had been regarded as a chief agent in promoting the late disturbances, the marquis de la Fayette waited upon him, and insisted upon his leaving the kingdom for a time. The duke was overawed, and, on pretence of public business, went to England, where he remained for several months.

On the 19th of October, the National Assembly held its first session in Paris. The King was closely guarded in his own palace; and no apparent opposition now stood in the way to prevent the popular party from giving to their country such a constitution as they might judge expedient. Much, however, was yet to be done, and many difficulties remained, resulting from the habits of men educated under a very different order of things. Two days after the Assembly came to Paris, a baker was publicly executed by the mob, upon a false accusation of having concealed a quantity of bread.—While the Assembly was at a distance, events of this nature had been little attended to, and the leading party avoided attempting to check these ebullitions of popular violence, from which they had derived so much advantage; but that party was now all-powerful, and so flagrant an offence committed against the law was regarded as an insult upon the sovereignty of the National Assembly. Two leaders of the mob were therefore tried and publicly executed, and a severe law was passed, of the nature of the British riot act, authorising the magistrates to act by military force against any multitude of persons that should refuse to disperse. Thus the peace of the capital was secured for several months; but in the country at large no small degree of anxiety and trouble still subsisted. The same suspicious temper which had prevailed at Paris agitated the provinces with the dread of plots and monopolies of grain. Add to this, that the noblesse in the country were by no means satisfied with the liberality with which their representatives had on the 4th of August voted away their privileges and their property. This produced violent jealousies between the peasants and their lords,

and gradually conveyed to every corner of the kingdom the political ferment which had commenced at Paris.

The National Assembly being now, however, in tolerable security, proceeded in the arduous attempt of forming a free constitution for the great empire of France. The Abbé Sieyes presented a plan for dividing the kingdom into 83 *departments*, of about 324 square leagues, and of each department into several *districts*, and each district was subdivided into *cantons* of four square leagues in extent. Thus the whole of the ancient divisions of the kingdom into governments, generalities, and bailiewicks, was in an instant obliterated. An attempt was also made to simplify in an equal degree the relative situation of individuals in civil life, by a decree which put an end to all distinction of orders and immunities, so far as any privilege whatever was concerned. At the same time, a bold and most important measure was adopted, which has since proved the organ of those terrible efforts which France has been enabled to make against the rest of Europe. This was the confiscation of the whole of the lands belonging to the church, for the purpose of supplying the exigencies of the state. In this transaction, all regard to justice was thrown aside. The lands of the church were as certainly the property of the then possessors of them as any entailed estate among us is the property of him who occupies it. The state may have had a right to appropriate to itself the church lands upon the death of the incumbents; but it might with equal justice, and perhaps greater propriety, have seized the enormous revenues of the Duke of Orleans, as have confiscated a single acre belonging to the most useless abbot without his own consent. This nefarious measure was proposed by the bishop of Autun, M. Tallegrand Perigord, a man of no religion, who had been promoted to the bench in a most irregular manner to serve this very purpose. The mode in which this property was to be expended was by issuing assignments (*assignats*) upon it; which assignments were to be received by the state for the payment of taxes, or for the purchase of church lands when set up to sale. A provision was at the same time made for the national clergy, who were for the future to be paid by the state. On the day following that on which this important measure was adopted, a decree was passed, suspending the parliaments of the kingdom from the exercise of their functions.

Decrees, in which the interests of so vast a multitude of individuals were involved, could not be carried into effect without much murmuring and opposition. The parliaments, in particular, began to exert themselves with vigour, and, by protests and other publications, attempted to invalidate the decrees of the Assembly as illegal; but these privileged bodies, who had often been accustomed to contend with some success against the despotic administration of their country, and on that account had been for ages the objects of public applause, now found themselves utterly forsaken, and unable to resist the mandate of a popular Assembly. After a few fruitless struggles, they were all of them under the necessity of submitting to their fate.

Nothing remarkable now occurred for some time.—The Assembly proceeded to organize the kingdom by the establishment of municipalities, and by reforming the jurisprudence of the country. It is to be observed, however, that when the parliament of Paris was abolished,

French
Revolution,
1789.

70
The king-
dom divi-
ded into
83 depart-
ments.

71
The church
lands con-
fiscated.

72
Fruitless
attempts
of the pa-
liaments.

73
Municipa-
lities esta-
blished, &c.

French Revolution. lished, the Chatelet, being the second court in that city, was retained for the purpose of trying those persons who had become most obnoxious by their attachment to the royal cause. This court had the spirit to acquit the Baron de Bezenval, Marshal Broglio, and the Prince de Lambesq. But having incurred much popular odium on this account, they were guilty of the unworthy meanness of condemning to death the Marquis de Favres, for a pretended conspiracy (of which no tolerable proof was ever brought) to massacre La Fayette, Bailly, and Neckar, and to convey the King to Peronne.

1790.

During the whole of this winter the King had been very strictly watched by numerous guards placed around his palace, insomuch that the other nations of Europe considered him as in a state of captivity. To do away this impression, if possible, and to make their king appear a voluntary agent in the measures that had lately been adopted, was now regarded as a matter of some importance. Every effort was therefore made to prevail with him to come to the Assembly suddenly, and, as it were, of his own voluntary motion, there to declare his adherence to the measures which had lately been adopted. For some time he resisted this proposal; but at length, on the 4th of February, he did suddenly appear in the National Assembly, where he complained of the attempts that had been made to shake the new constitution. He declared his wish "that it should be universally known that the monarch and the representatives of the nation were united, and their wishes were the same; that he would defend the constitutional liberty of the state; that, in conjunction with the Queen, he would early form the sentiments of his son for that new order of things which the circumstances of the empire had introduced." This declaration dispirited the aristocratic party in no small degree, and increased that unhappy tendency of looking for aid from foreign countries which they had always been too apt to indulge.

74
Monasteries suppressed, and their lands confiscated.

On the 13th of February, monastic establishments were suppressed, and their lands confiscated; but the present friars and nuns were allowed pensions for their subsistence, and to continue the observance of their monastic vows, if they thought fit. We may observe here, that, in consequence of the evacuation of the monasteries, it is probable that about this time the *Breton* committee began to assume the appellation of the *Jacobin Club*, from the hall belonging to the Jacobin friars at Paris, in which their meetings were now held.

March 15th.
75
The Red Book, or list of pensions and donations, published.

An event occurred at this time which tended in no small degree to increase the odium under which the old government already laboured. This was the publication of the *Red Book*, or list of pensions and donations granted by the crown. In consequence of the most pressing instances, it had been communicated by M. Neckar to a committee of the Assembly, after many intreaties, and the most solemn promises of secrecy. It afforded, however, too striking an advantage to the popular party not to be made use of, and in a few days M. Neckar, to his no small surprise, saw this register publicly sold by every bookseller in Paris. He ought not, indeed, to have been surprised; and the giving up of this list is one of the many proofs which the transactions of that period afford of his great unsuitness for the office which he held. With much indignation, however, he de-

manded why the committee had published it without the permission of the Assembly or the King? But he was told by the committee, that "as to the Assembly, they were sure of its approbation; and as to the King, they were not his representatives." To give an idea of the effect of this publication, it is only necessary to remark, that, under the short administration of M. Calonne, the two brothers of the King had received from the public treasury, independent of their legitimate income, nearly two millions sterling, and that L. 600,000 had been granted to an individual, because he was the husband of Madame de Polignac. M. Neckar's opposition to this publication tended in no small degree to injure his popularity, and the rest of the ministry began to lose the confidence of the public. Indeed, at this time, fertile causes of alarm prevailed on all sides. The clergy were attempting to revive in the provinces the ancient animosities between the Roman Catholics and the Protestants, ascribing the late decrees of the Assembly to the latter. The German Princes who possessed property in the north of France were complaining loudly of the violation of their rights by the abolition of the feudal system, although the National Assembly had voted to them a compensation. The most melancholy intelligence was received from their colonies in the West Indies. In regulating these, the Assembly had not recognized the right of the free negroes to enjoy the same privileges with other citizens; at the same time, they did not go the length of denying these privileges. This uncertain conduct produced infinite calamities. The whites contended with those commonly called *people of colour*. These again sometimes stood in opposition to the free negroes, or to the slaves; and hence it sometimes happened that no less than three hostile assemblies were held at the same time in the same colony, which made war upon each other with the most inveterate fury. Each party found protectors in the National Assembly of the parent state. Those who favoured or opposed the existence of distinctions at home, in general followed out the same principle with regard to the colonies.

French Revolution. 1790.
76
Effect of its publication.

77
Numerous sources of alarm.

On the 14th of May, M. de Montmorency communicated to the National Assembly the preparations for war in which England and Spain were engaged. This brought forward the constitutional question, "Who ought to possess the power of declaring peace and war?" The Count Clermont Tonnerre, Messrs de Serent, Vireu, and Dupont, supported the royal prerogative; while on the other side, the exclusive right of the legislative body to exercise this important prerogative was supported by Messrs d'Aiguillon, Garat jun. Freteau, Jellot, Charles Lameth, Sillery, Petion, Robespierre, &c. M. Petion proposed a decree "that the French nation renounced for ever all idea of conquest, and confined itself entirely to defensive war;" which was passed with universal acclamation. The Count de Mirabeau at length successfully proposed that peace and war should be declared by the king and the legislative body in conjunction; and the decree that was passed on the subject is a strange farrago of contradictions and absurdities. It enjoined the King to "guard the state from external attacks." But how could this be done, without repelling any attack that might be made upon it? This, however, he could not do, without previously informing the National Assembly; and if that body chanced

78
Debate on the royal power to declare peace and war.

not.

French
Revolution,
1790.

79

Farce acted
in the as-
sembly by
a Prussian
refugee,
&c.

not to be sitting at the time, he was bound to let the enemy advance without opposition till he had convened his orators, dispersed over 24,000 square leagues, and listened to their metaphysical quibbles in Paris.

On the 19th June, a very singular farce was acted in the Assembly. A Prussian refugee, who called himself Anacharis Clouts, and who was struggling hard to bring himself into public notice, on an evening sitting (which, it is to be observed, was generally ill attended by the persons of the highest rank), introduced to the Assembly a number of persons dressed in the different habits of all the different countries that could be thought of. In a formal harangue, he told the Assembly that he was come, as the *orator of the human race*, at the head of the representatives of all nations, to congratulate them upon the formation of their new constitution. He was answered by the President with abundance of solemnity, and retired with his motley groupe. This fantastical piece of folly, which in any other country than France would scarcely, perhaps, have excited a smile, was treated by the Assembly in a serious light. Alexander Lameth proposed, that the figures of different nations exhibited in chains at the feet of Louis XIV. should be destroyed as an insult upon mankind. M. Lambel, a lawyer, at this moment proposed the *abolition of all hereditary titles*. He was supported by La Fayette, St Fargeau, and the Viscount de Noailles. The decree was passed, along with another suppressing all armorial bearings. It is our intention at present rather to state facts than to hazard any political opinion concerning the wisdom or folly of the transactions which we record. It may here, however, be remarked, that no part of the proceedings of the French National Assembly was received by persons of rank upon the Continent of Europe with so much indignation as this.—The feudal system had been overturned, and the property of the church wrested from it, with little comparative notice; but when those nominal distinctions were attacked which antiquity had sanctioned, and personal vanity rendered dear, the surrounding nations were instantly alarmed, and beheld with terror the levelling precedent. We may likewise add, that no part of their proceedings was more inimical to rational and practical freedom. To preserve a perfect equality of ranks is impossible. In a commercial nation, industry will procure wealth, and wealth will every where procure dependents. Now nothing more contributes to keep within some tolerable bounds the insolence of newly acquired wealth, than the rank attached to birth and nobility, which time and prejudice have conspired to make respectable. It is not a little remarkable, that of all the King's ministers, Neckar alone, a plebeian, a republican, born and bred in a democracy, advised his Majesty to refuse his assent to this foolish decree, as a violent but useless encroachment upon the prejudices of a powerful order of the state.

81

Proposal to
commemo-
rate the ta-
king of the
Bastile.

In the mean time, the capital was entirely engrossed by hurry and bustle. M. Bailly had proposed a plan for commemorating the anniversary of the taking of the Bastile. It was adopted, because it flattered the vanity of the people, by presenting them with a splendid spectacle in commemoration of their own exertions.—The army had been much disorganized; and it was resolved to attempt to unite all its branches, as well as the whole departments of the state, in one common at-

tachment to the new order of things, by collecting into one place deputations, for the purpose of swearing fidelity to the new constitution. In the middle of the Champ de Mars an altar was erected, at which the civic oath, as it was called, was to be taken. Around the altar an amphitheatre was thrown up capable of containing 400,000 spectators; 2000 workmen were employed in this operation; and the people of Paris, fearing lest the plan might not be completed, assisted in the labour. All ranks of persons, the nobles, clergy, and even ladies, with the eagerness for novelty so peculiar to that people, united their efforts. Crowds of foreigners as well as natives hurried to the capital to be present at this solemnity, which was called the *Confederation*. The long-expected 14th of July at length arrived. At six o'clock in the morning the procession was arranged on the Boulevards, and consisted of the electors of the city of Paris, the representatives of the commons, the administrators of the municipality, a battalion of children, with a standard, inscribed "The hopes of the nation;" deputies from the troops of France wherever quartered, and of every order, along with deputies from all the departments; to these were added immense detachments of the military, and of the national guards, along with an almost infinite multitude of drums, trumpets, and musical instruments. The procession was extremely splendid, as every district had its peculiar decorations. The national assembly passed through a grand triumphal arch, and the king and queen, attended by the foreign ministers, were placed in a superb box. After a solemn invocation to God, the King approached the altar, and, amidst the deepest silence, took the following oath: "I the King of the French do swear to the nation, that I will employ the whole power delegated to me by the constitutional law of the state, to maintain the constitution, and enforce the execution of the law." The president of the national assembly then went up to the altar, and took the civic oath, "I swear to be faithful to the nation, the law, and the king; and to maintain with all my powers the constitution decreed by the national assembly, and accepted by the king." Every member of the assembly standing up, said, "That I swear." La Fayette then advancing, took the oath for himself; the other deputies of the national guards pronouncing after him, "That I swear;" and these words were solemnly pronounced by every individual of this immense assembly. *Te Deum* was then sung. The performance was sublime beyond the powers of description. Never perhaps before was there such an orchestra, or such an audience: their numbers baffled the eye to reckon, and their shouts in full chorus rent the skies. It is impossible to enumerate all the means which were employed to add splendor to this day. It ended with a general illumination, and no accident disturbed the public tranquillity.

The assembly now proceeded in the formation of the constitution with considerable tranquillity; which, however, was disturbed by an unhappy event at Nancy. Most of the officers of the army were unfriendly to the late revolution, and every means had been employed by them to disgust the soldiers with it. At Nancy, in particular, necessities had been denied them, and their pay was kept back, under pretence that this was the will of the national assembly. Driven to despair, the regiments in garrison threw off their allegiance, and de-

French
Revolution,
1790.

82

Ceremony
of the con-
federation.

83

The sol-
diers at
Nancy dis-
gusted, and
the conse-
quences.

French
Revolution
1790.

manded loudly the regimental accounts. They seized at the same time the military chest, and sent a deputation to state their case at Paris to the national assembly. But the officers were before-hand, and prepossessed the minister of war against them; upon whose representation a decree was passed, authorising the commander in chief of the province, M. Bouillé, to reduce the insurgents by force. This was no sooner known, than the national guard of Nancy assembled, and sent a deputation to give a fair statement of facts. But Bouillé, without waiting the result of an explanation, hastened to Nancy at the head of all the troops he could suddenly collect; and having fallen upon the regiments of Chateaufieux and Mestre de Camp, after putting an immense multitude to the sword, he took 400 prisoners.

The King's regiment was prevented from acting against Bouillé by the intrepidity of a young officer of the name of *Desfilles*, who, however, died of the wounds which he received on the occasion. The news of these events filled Paris with indignation. The assembly afterwards reversed its own decrees against the insurgents at Nancy. Public honours were decreed to the memory of *Desfilles*; but Bouillé could not be punished, because he had only acted in obedience to authority.

84
M. Neckar
resigns, and
leaves the
kingdom
without
being
regretted.

M. Neckar's popularity had been gradually declining, as he was unwilling to go all the lengths that the ruling party wished. He gave in his resignation on the 4th of September, and speedily thereafter left the kingdom. He was regretted by no party. He was regarded, on the one side, as having conducted the kingdom to its ruin, by the concessions which he originally advised the king to make in favour of the *tiers état*; while he was despised by the opposite party as a lukewarm politician, of narrow views, and a feeble mind. He departed, however, with the unblemished reputation of strict integrity. M. Neckar does not seem to have penetrated deeply into the characters of men, or to have had any conception of the effects of that terrible and restless energy which is called forth in a nation which attempts to make important changes in its ancient manners and government. Having no conception of the important era which was about to open upon that country of which he was the minister, he was far from being qualified to direct or controul it amidst the convulsions which it was destined to encounter. Unable to brook the loss of his popularity, he peevishly retired to Switzerland, where he published a work, which shows to the conviction of every unprejudiced reader the integrity of the French king, and the wicked projects of the leading democrates, whom he himself had armed with power.

85
Attempts
to re-orga-
nise the
navy.

The remaining part of this year was occupied in attempts to introduce some degree of subordination into the navy of France, which had been much disorganized, and in farther regulating the affairs of the clergy. It was now declared, that such clergymen as should not take the following oath, which had been prescribed some months before, should be considered as ejected from their benefices: "To watch carefully over the faithful in the parish or diocese which was entrusted to his care; to be faithful to the nation, the law, and the king; and to maintain to the utmost of his power the new constitution of France, and particularly the decrees relative to the civil constitution of the clergy." This

decree rendered the situation of conscientious men extremely perplexing; especially as the pope testified in marked terms his disapprobation of the oath. The people were reduced to the dilemma of choosing between their new political and their old religious prejudices, and the result was extremely unfavourable to the interest of religion.

The assembly commenced the new year with a decree, announcing the termination of its session, which was to take place as soon as it should have finished the discussion of a list of constitutional articles. In the meantime, on the side of Germany, Spain, Italy, and Savoy, hostile appearances began to be exhibited, and bodies of troops advanced around the French frontier. The Emperor Leopold was, however, too cautious to announce his intentions; and the King soon communicated a letter from him, containing protestations of amicable dispositions, but adding, that "the innovations occasioned by the decrees of the 4th of August ought to be done away." The King treated this merely as an official measure on the part of the Emperor, that he might not appear to renounce the claims of certain German princes connected with Lorraine and Alsace. But the assembly expressed some alarm, and voted an augmentation of the national force. About this period several new efforts were made by the disaffected clergy in various parts of the kingdom to excite disturbances, which it is unnecessary to mention in detail. On the 20th of February the public attention was roused by a circumstance that in any other state of affairs would have been accounted unimportant. The King announced to the assembly, that his aunts, the daughters of Louis XV. had that morning left Paris; but as he did not apprehend that the existing laws laid them under any restraint in this respect, he had not opposed their departure. After some debate, the assembly agreed that the King had judged well; and these princesses were left to pursue their journey to Rome, which they reached after some delays occasioned by the jealousy of certain municipalities through which they passed. Thus the kingdom was gradually deserted by every branch of the royal family, excepting the King and his eldest brother Monsieur. The assembly, however, continued its labours with considerable quietness. In the end of the month of March died the celebrated M. de Mirabeau, at the age of 42 years; a man whose integrity has for many good reasons been much suspected, but whose political address and intrepidity, and whose splendid powers of eloquence, have been seldom equalled. He received from his countrymen at his death marks of respect unparalleled in modern history. During his short illness, his door was besieged by anxious citizens. A mourning of eight days was decreed by the assembly, and also a grand procession, which was attended by all the public functionaries. He was the first who was interred in the new magnificent Pantheon, consecrated to the reception of the remains of illustrious men. But his ashes were afterwards removed, in consequence of very clear proofs that he had not been incorruptible by money.

During the whole of this spring, much fear was entertained that some attempts at a counter revolution were about to be made. The emigrant army assembled on the borders of Alsace was reviewed by the prince of Condé. Their uniform was black, faced with yellow,

French
Revolution.

1791.
86
Hostile ap-
pearances
in Germa-
ny, &c.

87
Departure
of the
king's
aunts
from
Paris.

88
Death of
Mirabeau.

89
An emi-
grant army
assembled
on the
borders of
Alsace.

French
Revolution,
1791.

90
Jealousy of
the people
and mili-
tary left
the king
and his fa-
mily should
emigrate.

91
Behaviour
of Bouillé
on the
frontiers.

92
The king,
queen, and
royal fami-
ly, leave
Paris.

93
Monsieur
and ma-
dame ar-
rive at
Brussels.

with a death's head, surrounded by a laurel wreath on one cuff, and a sword on the other; with the motto, "Conquer or die." The king was also surrounded by crowds of nonjuring priests and other disaffected persons. Thus, that popular jealousy which in every period of the revolution has strikingly marked the French character, was kept on the alarm. On the 18th of April, therefore, when the royal family was preparing to go to St Cloud to pass some days, a report was instantly spread that the king was about to fly from the country. The carriages were immediately surrounded by people. La Fayette drew out the national guard, but they refused to act. "We know (exclaimed they) that we are violating the laws, but the safety of our country is the first law." The King instantly went to the assembly, and with much spirit complained of the insult. He was answered respectfully by the president, and continued his journey. As the royal family had enjoyed a considerable degree of freedom for some time past, which was demonstrated by the unsuccessful opposition made to this journey—the present opportunity was embraced for intimating to foreign courts his acceptance of the constitution; and all obnoxious persons were dismissed from about his person. The breach of discipline on the part of the national guard on this occasion was so much resented by La Fayette, that he resigned his command. Paris was thrown into consternation; and it was not till after the most universal solicitation that he was prevailed upon to resume his office.

About this time M. de Bouillé, to whom the protection of the frontiers was entrusted, was employing, as it is now said, every means in his power to render the country defenceless. The garrisons were left unprovided; dissension was spread among the national troops; they were removed from the frontiers, and their place was occupied by foreigners, wherever it could be done. The emigrants abroad, and their friends at home, were lying in wait for an opportunity of revolt;—when suddenly, on the 21st of June, it was announced from the Thuilleries, that the king, the queen, the dauphin, with monsieur and madame, had quitted the palace and the capital, without leaving any information of their intention or their route. The emotion excited by this news among the multitude was a mixture of consternation and rage. The national assembly, however, acted with much coolness. They instantly took upon themselves the government, and decreed their sittings permanent. They sent messengers, at the same time, in all directions, to attempt to lay hold of the fugitives. These had taken different routs. Monsieur and madame arrived safely at Brussels on the 23d. The king, queen, and their children, when they came to a considerable distance from the capital, were furnished by Bouillé with a guard of dragoons, under pretence of protecting treasure for the pay of the troops. At the distance of 156 miles, and when only a few leagues from the frontiers, they were arrested at St Menchould by the postmaster, M. Drouet, formerly a dragoon in the regiment of Condé. At half past seven o'clock in the evening the carriages stooped to change horses at his house; he thought he recollected the queen, and imagined that the king's face resembled the impressions stamped upon assignats. The escort of dragoons increased the suspicion. He suffered them to depart at

11 o'clock without notice; but taking a companion with him, he went by a shorter road to Varennes. With the assistance of the postmaster there he gave the alarm, and overturned a carriage on the bridge, which detained the royal travellers till the national guard of the place had assembled, and the arrest was effected without bloodshed. They were brought back to Paris by a deputation from the assembly. At his departure, the king had imprudently left behind him a memorial, in which he declared, that he never had thought any sacrifice too great for the restoration of order; but that the destruction of the kingdom, and the triumph of anarchy, being the only reward of all his efforts, he thought it necessary to depart from it. He then takes a review of the faults of the new constitution, the grievances he has suffered; and protests against every thing that he had been compelled to do during his captivity.

Different parties were very differently affected by this ill-conducted and unfortunate flight of the King. A small republican party had already begun to appear, and during the king's absence, attempts were made to induce the public at large to consider the royal authority as no necessary part of a free constitution. But the minds of men were by no means prepared for the reception of this new doctrine. The idea, however, having been thus publicly proposed, left some impressions, which in time contributed to give rise to important events. By far the greater number of leading men, however, were at present convinced, that it was impossible to conduct a great empire like France, well and prosperously, without the assistance of an hereditary chief. They therefore determined to pass over the affair with as much silence as possible, and to hasten the period when their new constitution should be complete. But there is reason to believe, that this journey was at the long-run highly instrumental in producing very fatal effects to the personal safety of the monarch.

His flight seemed a signal for emigration. Many of the aristocratic party sent in resignations of their seats in the national assembly. Troops were levied on the frontiers in the King's name; who took care, however, to disavow any connection with such a procedure. Bouillé emigrated, and afterwards sent to the assembly a furious threatening letter: "You shall answer (says he) for the lives of the king and of the queen to all the monarchs of the universe. Touch but a single hair of their heads, and not one stone shall be left upon another in Paris. I know the roads. I will conduct the foreign armies. This letter is but the forerunner of the manifesto of the sovereigns of Europe."

A considerable calm throughout France followed these events, and it might be regarded as in a state of tranquillity. It contained, indeed, parties entertaining much animosity against each other, and many citizens had withdrawn to foreign countries; but the peace was not broken, and moderate men hoped that much prosperity would follow from the late agitations. But this calm was delusive; and in the midst of it those projects were formed which were afterwards to prove so fatal to the peace of France and of Europe. Towards the close of this summer, a convention took place at Pilnitz in Saxony between the emperor Leopold and the king of Prussia. Its object was not known at the time, but it gradually came into view, and is now by many understood.

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Revolution,
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94
The king
and queen
arrested at
Varennes.

95
Consequences
of this
unfortunate
flight.

96
Treaty of
Pilnitz.

French Revolution, 1791. flood to have been intended for the purpose of concluding a league for the invasion of France, the new-modelling of its government, and the partition of some of its fairest provinces. The following paper has been repeatedly published as the copy of a treaty concluded and signed at Pavia, and is generally understood to have been identical with, and therefore known by, the name of the *Treaty of Pilnitz*. We are far from vouching for its authenticity. It may have been fabricated by the French assembly, to unite all parties in the nation against the foreign powers which threatened to invade them. But in stating the events of this revolution, it is perhaps still more necessary, for the purpose of rendering the actions of men comprehensible, to give an account of what was at the time *believed* to have occurred, than it now is to ascertain what was actually true.

Partition Treaty between the Courts in Concert, concluded and signed at Pavia, in the Month of July 1791.

His majesty the emperor will take all that Louis XIV. conquered in the Austrian Netherlands, will give them to his serene highness the elector Palatine; so that these new possessions, added to the Palatinate, may hereafter have the name of *Austrasia*.

His majesty will preserve for ever the property and possession of Bavaria, to make in future an indivisible mass with the domains and hereditary possessions of the house of Austria.

Her serene highness the archduchess Maria Christina shall be, conjointly with his serene highness her nephew the archduke Charles, put into hereditary possession of the duchy of Lorraine.

Alsace shall be restored to the empire; and the bishop of Strasbourg, as well as the chapter, shall recover their ancient privileges, and the ecclesiastical sovereigns of Germany shall do the same.

If the Swiss Cantons consent to accede to the coalition, it may be proposed to them to annex to the Helvetic league the bishopric of Porentrui, the defiles of Franche Comté, and even those of Tyrol, with the neighbouring bailiwicks, as well as the territory of Versoy, which intersects the Pays de Vaud.

Should his majesty the king of Sardinia subscribe to the coalition, La Bresse, Le Bugey, and the Pays de Gex, usurped by France from Savoy, shall be restored to him.

In case his Sardinian majesty can make a grand diversion, he shall be suffered to take Dauphiné, to belong to him for ever as the nearest descendant of the ancient dauphins.

His majesty the king of Spain shall have Roussillon and Bearn, with the island of Corsica; and he shall have the French part of the island of St Domingo.

Her majesty the empress of all the Russias shall take upon herself the invasion of Poland, and at the same time retain Kamieniech, with that part of Padolia which borders on Moldavia.

His majesty the emperor shall oblige the Porte to give up Chocsim, as well as the small forts of Servia, and those on the river Lurna.

His majesty the king of Prussia, by means of the above-mentioned invasion of the empress of all the Russias into Poland, shall make an acquisition of Thorn and Dantzic, and there unite the Palatinate on the east to the confines of Silesia.

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French Revolution, 1791. His majesty the king of Prussia shall besides acquire Lusace; and his serene highness the elector of Saxony shall in exchange receive the rest of Poland, and occupy the throne as hereditary sovereign.

His majesty the present king of Poland shall abdicate the throne on receiving a suitable annuity.

His royal highness the elector of Saxony shall give his daughter in marriage to his serene highness the youngest son of his royal highness the grand duke of all the Russias, who will be the father of the race of the hereditary kings of Poland and Lithuania. (Signed) LEOPOLD. PRINCE NASSAU. COUNT FLORIDA BLANCA. BISCHOFFSWERDER.

In the mean time, the national assembly was hastening fast to the completion of the new constitution. It was finished on the 3d of September, and presented to the king. It begins with the following declaration of the rights of a man and a citizen, and thereafter follow the different branches; the chief of which are here translated.

I. All men are born, and remain, free and equal in rights: social distinctions cannot be founded but on common utility.

II. The end of all political associations is the preservation of the natural and imprescriptible rights of man: these rights are liberty, property, security, and resistance against oppression.

III. The principle of *sovereignty* resides essentially in the nation: *no body of men, no individual*, can exercise an authority that does not emanate expressly from that source.

IV. *Liberty* consists in the power of doing every thing except that which is hurtful to another: hence the exercise of the natural rights of every man has no other bounds than those that are necessary to ensure to the other members of society the enjoyment of the same rights: those bounds can be determined by the law only.

V. The law has a right to forbid those actions alone that are hurtful to society. Whatever is not forbidden by the law, cannot be hindered; and no person can be constrained to do that which the law ordaineth not.

VI. The law is the expression of the general will: all the citizens have a right to concur personally, or by their representatives, to the formation of the law: it ought to be the same for all, whether it protect, or whether it punish. All citizens being equal in the eye of the law, are equally admissible to dignities, places, and public offices, according to their capacity, and without any other distinction but that of their virtue and their talents.

VII. No man can be accused, arrested, or detained, except in cases determined by the law, and according to the forms which the law hath prescribed. Those who solicit, dispatch, execute, or cause to be executed, arbitrary orders, ought to be punished; but every citizen that is summoned or seized in virtue of the law, ought to obey instantly—he becomes culpable by resistance.

VIII. The law ought to establish such punishments only as are strictly and evidently necessary; and no person can be punished but in virtue of a law established and promulgated prior to the offence, and legally applied.

IX. Every man being presumed innocent till such time

97
The new constitution concluded by the assembly.

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time as he has been declared guilty, if it shall be deemed absolutely necessary to arrest a man, every kind of rigour employed, not necessary to secure his person, ought to be severely repressed by the law.

X. No person shall be molested for his opinions, even such as are religious, provided that the manifestation of those opinions does not disturb the public order established by the law.

XI. The free communication of thought, and of opinion, is one of the most precious rights of man. Every citizen, therefore, may freely speak, write, and publish, his sentiments; subject, however, to answer for the abuse of that liberty, in cases determined by the law.

XII. The guarantee of the Rights of Man and Citizens, involves a necessity of *public force*: this force is then instituted for the advantage of all, and not for the particular utility of those to whom it is confided.

XIII. For the maintenance of public force, and for the expences of administration, a common contribution is indispensably necessary: this contribution should be equally divided amongst all the citizens, in proportion to their abilities.

XIV. Every citizen has a right, by himself, or by his representatives, to decide concerning the necessity of the public contribution; to consent to it freely; to look after the employment of it; to determine the quantity, the distribution, the collection, and duration.

XV. The society has a right to demand from every public agent an account of his administration.

XVI. Every society, in which the guarantee of rights is not assured, nor the separation of powers determined, has *no constitution*.

XVII. Property being a right inviolable and sacred, no person can be deprived of it, except when the public necessity, legally ascertained, shall evidently require it, and on condition of a just and previous indemnification.

The constitution guarantees, as natural and civil rights,

1. That all citizens are admissible to places and employments without any distinction, but that of ability and virtue.

2. That all contributions shall be divided equally among all the citizens, in proportion to their means.

3. That the same crimes shall be subject to the same punishments, without any distinction of persons.

The constitution in like manner guarantees, as natural and civil rights,

Liberty to all men of going, staying, or departing, without being arrested, or detained, but according to the forms prescribed by the constitution.

Liberty to all men of speaking, writing, printing, and "publishing their thoughts, without having their writings subjected to any examination or inspection before publication;" and of exercising the religious worship to which they are attached:

Liberty to all citizens of assembling peaceably, and without arms, complying with the laws of police.

Liberty of addressing to all constitutional authorities petitions individually signed.

The constitution guarantees the inviolability of property, or a just and previous indemnity for that of which public necessity, legally proved, shall require the sacrifice.

A public instruction shall be created and organized, common to all citizens, gratuitous with regard to those parts of tuition indispensable for all men, and of which the establishment shall be gradually distributed in a proportion combined with the division of the kingdom.

"The kingdom is one and indivisible;" its territory, for administration, is distributed into 83 departments, each department into districts, each district into cantons.

Those are French citizens,

Who are born in France, of a French father;

Who having been born in France of a foreign father, have fixed their residence in the kingdom;

Who having been born in a foreign country, of a French father, have returned to settle in France, and have taken the civic oath:

In fine, who having been born in a foreign country, being descended in whatever degree from a Frenchman or a Frenchwoman, who have left their country from religious motives, come to reside in France, and take the civic oath.

The right of French citizenship is lost,

1st, By naturalization in a foreign country;

2dly, By being condemned to penalties which involve the civic degradation, provided the person condemned be not reinstated;

3dly, By a sentence of contumacy, provided the sentence be not annulled;

4thly, By initiation into any foreign order or body which supposes either proofs of nobility "or distinctions of birth, or requires religious vows."

"The law considers marriage only as a civil contract."

The sovereignty is one, indivisible, "inalienable, and imprescriptible," and it belongs to the nation: no section of the people, or individual, can arrogate the exercise of it.

The nation, from which alone flow all powers, cannot exercise them but by delegation.

The French constitution is representative: the representatives are the legislative body and the king.

The National Assembly, forming the legislative body, is permanent, and consists of one chamber only.

It shall be formed by new elections, every two years.

The legislative body cannot be dissolved by the king.

The number of representatives to the legislative body shall be 745, on account of the 83 departments of which the kingdom is composed; and independent of those that may be granted to the colonies.

The representatives shall be distributed among the 83 departments, according to the three proportions of land, of population, and the contribution direct.

Of the 745 representatives 247 are attached to the land. Of these each department shall nominate three, except the department of Paris, which shall nominate only one.

Two hundred and forty-nine representatives are attached to the population. The total mass of the active population of the kingdom is divided into 249 parts, and each department nominates as many of the deputies as it contains parts of the population.

Two hundred and forty-nine representatives are attached to the contribution direct. The sum total of the direct contribution of the kingdom is likewise divided into 249 parts; and each department nominates as many deputies as it pays parts of the contribution.

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In order to form a legislative national assembly, the active citizens shall convene, in primary assemblies, every two years in the cities and cantons.

"The primary assemblies shall meet of full right on the first Sunday of March, if not convoked sooner by the public officers appointed to do so by the law."

To be an active citizen, it is necessary,

To be a Frenchman, or to have become a Frenchman;

To have attained 25 years complete;

To have resided in the city or the canton from the time determined by the law;

To pay in any part of the kingdom a direct contribution, at least equal to the value of three days labour, and to produce the acquittance;

Not to be in a menial capacity, namely, that of a servant receiving wages;

To be inscribed in the municipality of the place of his residence in the list of the national guards;

To have taken the civic oath.

The primary assemblies shall name electors in the proportion of the number of active citizens residing in the city or canton;

There shall be named one elector to the assembly, or not, according as there shall happen to be present 100 active citizens.

There shall be named two, when there shall be present from 151 to 250, and so on in this proportion.

The electors named in each department shall convene, in order to choose the number of representatives, whose nomination shall belong to their department, and a number of substitutes equal to the third of the representatives.

"The assemblies shall be held of full right on the last Sunday of March, if they have not been before convoked by the public officers appointed to do so by law."

All active citizens, whatever be their state, profession, or contribution, may be chosen representatives of the nation.

Excepting, nevertheless, the ministers and other agents of the executive power, &c.

The members of the legislative body may be re-elected to a subsequent legislature, but not till after an interval of one legislature.

No active citizen can enter or vote in an assembly if he is armed.

The representatives shall meet on the first Monday of May, in the place of the sittings of the last legislature.

The royalty is indivisible, and delegated hereditarily to the race on the throne from male to male, by order of primogeniture, to the perpetual exclusion of women and their descendants.

Nothing is prejudged on the effect of renunciations in the race on the throne.

The person of the king is inviolable and sacred; his only title is king of the French.

If the king put himself at the head of an army, and direct the forces of it against the nation, or if he do not oppose, by a formal act, any such enterprise undertaken in his name, he shall be held to have abdicated.

If the king having gone out of the kingdom, do not return to it, after an invitation by the legislative body, within the space which shall be fixed by the pro-

clamation, "and which cannot be less than two months," he shall be held to have abdicated the royalty.

After abdication, express or legal, the king shall be in the class of citizens, and may be accused and tried like them, for acts posterior to his abdication.

The nation makes provision for the splendour of the throne by a civil list, of which the legislative body shall fix the sum at the commencement of each reign, for the whole duration of that reign.

The king is a minor till the age of 18 complete; and during his minority there shall be a regent of the kingdom.

The regency belongs to the relation of the king, next in degree according to the order of succession to the throne, who has attained the age of 25; provided he be a Frenchman resident in the kingdom, and not presumptive heir to any other crown, and have previously taken the civic oath.

The presumptive heir shall bear the name of *Prince Royal*.

"The members of the king's family called to the eventual succession of the throne, shall add the denomination of *French Prince* to the name which shall be given them in the civil act proving their birth; and this name can neither be patronymic nor formed of any of the qualifications abolished by the present constitution."

"The denomination of *prince* cannot be given to any individual, and shall not carry with it any privilege or exception to the common right of all French citizens."

To the king alone belongs the choice and dismissal of ministers.

"The members of the present national assembly, and of the subsequent legislatures, the members of the tribunal of appeal, and those who shall be of the high jury, cannot be advanced to the ministry, cannot receive any place, gift, pension, allowance, or commission of the executive power or its agents during the continuance of their functions, or during two years after ceasing to exercise them: the same shall be observed respecting those who shall only be inscribed on the list of high jurors as long as their inscription shall continue."

No order of the king can be executed if it be not signed by him, and countersigned by the minister or comptroller of the department.

In no case can the written or verbal order of a king shelter a minister from responsibility.

The constitution delegates exclusively to the legislative body the powers and functions following;

To propose and decree laws—The king can only invite the legislative body to take an object into consideration;

To fix the public expences;

To establish the public contributions, to determine the nature of them, the amount of each sort, the duration, and the mode of collection, &c.

War cannot be resolved on but by a decree of the national assembly, passed on the formal and necessary proposition of the king, and sanctioned by him.

During the whole course of war, the legislative body may require the king to negotiate peace; and the king is bound to yield to this requisition.

It belongs to the legislative body to ratify treaties of peace,

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peace, alliance, and commerce; and no treaty shall have effect but by this ratification.

The deliberations of the legislative body shall be public, and the minutes of the sittings shall be printed.

The legislative body may, however, on any occasion, form itself into a general committee.

The plan of a decree shall be read thrice, at three intervals, the shortest of which cannot be less than eight days.

The decrees of the legislative body are presented to the king, who may refuse them his consent.

In case of a refusal of the royal consent, that refusal is only suspensive. — When the two following legislatures shall successively present the same decree in the same terms on which it was originally conceived, the king shall be deemed to have given his sanction.

The king is bound to express his consent or refusal to each decree within two months after its presentation.

No decree to which the king has refused his consent can be again presented to him by the same legislature.

The supreme executive power resides exclusively in the hands of the king.

The king is the supreme head of the land and sea forces.

The king names ambassadors, and the other agents of political negotiations.

He bestows the command of armies and fleets, and the ranks of marshal of France and admiral:

He names two-thirds of the rear-admirals, one-half of the lieutenant-generals, camp-marshals, captains of ships, and colonels of the national gendarmerie:

He names a third of the colonels and lieutenant-colonels, and a sixth of the lieutenants of ships:

He appoints in the civil administration of the marine, the directors, the comptrollers, the treasurers of the arsenals, the masters of the works, the under masters of civil buildings, half of the masters of administration, and the under masters of construction.

He appoints the commissaries of the tribunals:

He appoints the superintendants in chief of the management of contributions indirect, "and the administration of national domains:"

He superintends the coinage of money, and appoints officers entrusted with this superintendence in the general commission and the mints.

The effigy of the king is struck on all the coinage of the kingdom.

There is in each department a superior administration, and in each district a subordinate administration.

The administrators are specially charged with distributing the contributions direct, and with superintending the money arising from the contributions, and the public revenues in their territory.

The king has the right of annulling such acts of the administrators of department as are contrary to the law or the orders transmitted to them.

He may, in case of obstinate disobedience, or of their endangering, by their acts, the safety or peace of the public, suspend them from their functions.

The king alone can interfere in foreign political connections.

Every declaration of war shall be made in these terms: *By the king of the French in the name of the nation.*

The judicial power can in no case be exercised either by the legislative body or the king.

Justice shall be gratuitously rendered by judges chosen from time to time by the people, and instituted by letters patent of the king, who cannot refuse them.

"The public accuser shall be nominated by the people."

"The right of citizens to terminate disputes definitively by arbitration, cannot receive any infringement from the acts of the legislative power."

In criminal matters, no citizen can be judged except on an accusation received by jurors, or decreed by the legislative body in the cases in which it belongs to it to prosecute the accusation.

After the accusation shall be admitted, the fact shall be examined, and declared by the jurors.

The person accused shall have the privilege of challenging 20, "without assigning any reason."

The jurors who declare the fact shall not be fewer than 12.

The application of the law shall be made by the judges.

The process shall be public; "and the person accused cannot be denied the aid of counsel."

No man acquitted by a legal jury can be apprehended or accused on account of the same fact.

For the whole kingdom there shall be one tribunal of appeal, established near the legislative body.

A high national court, composed of members of the tribunal of appeal and high jurors, shall take cognizance of the crimes of ministers, and the principal agents of the executive power; and of crimes which attack the general safety of the state, when the legislative body shall pass a decree of accusation.

It shall not assemble but on the proclamation of the legislative body; "and at the distance of 30,000 toises at least from the place of meeting of the legislative body."

The national guards do not form a military body, or an institution in the state; they are the citizens themselves called to assist the public force.

Officers are chosen for a time, and cannot again be chosen till after a certain interval of service as privates.

None shall command the national guard of more than one district.

All the parts of the public force employed for the safety of the state from foreign enemies are under the command of the king.

Public contributions shall be debated and fixed every year by the legislative body, and cannot continue in force longer than the last day of the following session, if they are not expressly renewed.

"Detailed accounts of the expence of the ministerial departments, signed and certified by the ministers or comptrollers-general, shall be printed and published at the commencement of the sessions of each legislature.

"The same shall be done with the statements of the receipt of the different taxes, and all the public revenues."

The French nation renounces the undertaking of any war with a view of making conquests, and will never employ its forces against the liberty of any people.

The constituting national assembly declares, "That the

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French Revolution, 1791. the nation has the imprescriptible right of changing its constitution; and nevertheless considering that it is more conformable to the national interest to employ only by means provided in the constitution itself, the right of reforming those articles of it, of which experience shall have shown the inconveniencies, decrees, that the proceeding by an assembly of revision shall be regulated in the form following:

"When three successive legislatures shall have expressed an uniform wish for the change of any constitutional article, the revision demanded shall take place.

"The next legislature, and the following, cannot propose the reform of any constitutional article.

"The fourth legislature, augmented with 249 members, chosen in each department, by doubling the ordinary number which it furnishes in proportion to its population, shall form the assembly of revision."

The French colonies and possessions in Asia, Africa, and America, "though they form part of the French empire," are not included in the present constitution.

With respect to the laws made by the national assembly which are not included in the act of constitution, and those anterior laws which it has not altered, they shall be observed, so long as they shall not be revoked or modified by the legislative power.

98 And accepted by the king. On the 13th of September the King announced, by a letter to the President of the Assembly, his acceptance of the constitution. This event was ordered to be notified to all the foreign courts, and the Assembly decreed a general amnesty with respect to the events of the revolution. On the following day the King repaired in person to the National Assembly; and being conducted to a chair of state prepared for him at the side of the President, he signed the constitutional act, and took an oath of fidelity to it. He then withdrew, and was attended back to the Thuilleries by the whole Assembly, with the President at their head.

99 The assembly dissolved. On the 30th of September, this National Assembly, which has since been known by the name of the *Constituent Assembly*, dissolved itself, and gave place to the succeeding *Legislative National Assembly*, which had been elected according to the rules prescribed by the new constitution.

100 Character and labours of the constituent assembly. On the character and the labours of the *Constituent Assembly*, we shall only remark, that it contained many men of talents, and, in all probability, a considerable number of men of integrity. Towards the close of its session, it assumed a very striking character of moderation, and appears to have been completely monarchical, although its jealousy of the ancient aristocracy prevented it from sufficiently guarding the throne against popular violence; for a very striking defect in the new constitution soon appeared. The King possessed a *veto*, or negative, upon the resolutions of the legislative body: but this negative he was bound to exercise in person, without responsibility, and without the intervention of his ministers. He had no senate, or upper chamber, to stand between him and popular violence; and there was something apparently absurd in fettering the vote of an individual, in opposition to the collective wisdom and will of a whole nation. In consequence of this, he was reduced to the hard alternative of yielding to every vote of the National Assembly, or of exposing himself personally to public odium.

The new Assembly was opened by the King on the

7th of October, with much apparent union on all sides. His speech, recommending unanimity and confidence between the legislative and executive powers, was received with unbounded applause. The character of the men who composed the new National Assembly was unpropitious to the Court. At the commencement of the revolution, the great body of the people at a distance from the capital were little interested in those projects of freedom which occupied the more enlightened or more turbulent inhabitants of Paris. They had gradually, however, been roused from their lethargy. The variety of powers conferred by the new constitution upon the people at large, and the multiplicity of offices of which it gave them the patronage, had kindled in the minds of men a love of dominion, and a wish to interfere in public affairs. This attached them to the new order of things. The love of power, which is the least disguised passion in the human heart, and equally strong in the breast of the meanest and of the highest of mankind, was thus, under the name of liberty, become a leading passion throughout this wide empire. They who flattered it most, and were most loud in praise of the rights of the people, became speedily the favourites of the public. The consequence of this was, that the new National Assembly was chiefly composed of country gentlemen, of principles highly democratic, or of men of letters who had published popular books, or conducted periodical publications. The members of the Constituent Assembly had been excluded by their own decree from holding seats in the new legislature.—The members of the latter, therefore, had little regard for a constitution which they themselves had not framed, and which was not protected by the venerable sanction of antiquity.

102 Their jealousy of the ministers of the crown, and consequent conduct. When this Assembly first met, it showed a very trifling attention to formalities, and a peevish jealousy of the ministers of the crown. In the mean time, the treaty of Pilnitz, already mentioned, began to be rumoured abroad, and France was thrown into a state of anxious jealousy for the safety of its newly-acquired liberties. Although the Prussians and Germans (the Elector of Mentz alone excepted) all continued to temporize, the northern powers, Sweden and Russia, entered into strict engagements to restore the old despotism of France. On the 9th of November, a decree was passed, that the emigrants who, after the first of January next, should be found assembled, as at present, in a hostile manner, beyond the frontiers, should be considered as guilty of a conspiracy, and suffer death; that the French Princes, and public functionaries, who should not return before that period, should be punishable in the same manner, and their property forfeited during their own lives. On the 18th, a series of severe decrees was also passed against such of the ejected clergy as still refused to take the civic oath. To both these decrees the King opposed his *veto*, or negative.—The moderate party, who were attached to the constitution, rejoiced at this as a proof of the freedom of their sovereign. But, on the other side, it excited a most violent clamour, and became the means of exciting new suspicion of the wishes of the Court. At this time answers were received from the different foreign Courts to the notification sent them of the King's acceptance of the new constitution. These were generally conceived in a stile of caution, and avoided giving open

French Revolution, 1791. 101 The new assembly opened by the king, and the character of the members.

103 Pacific answers were received from the different foreign powers.

French
Revolution,
1791.

104
But the
court is still
suspected.

105
The mini-
stry chan-
ged.

106
The Feuil-
lans esta-
blished to
oppose the
Jacobin
club.

107
State of
France in
the end of
1791 and
beginning
of 1792.

open offence. The Emperor even prohibited all assemblages of emigrants within his states; and the King intimated to the Assembly that he had declared to the Elector of Treves, that unless the emigrants should cease before the 15th of January to make hostile preparations within his territories, he would be considered as the enemy of France. All this, however, did not preserve the court from suspicion; for although the different foreign courts had openly declared pacific intentions, yet the French emigrants boldly asserted, that all Europe was actually arming in their favour. Accordingly they ceased not to solicit their equals in rank, who still remained within the country, to leave it to join with them in what they called the *royal cause*.—The unhappy Louis, placed between a republican party that was gradually gathering strength, and an aristocratical party that was rousing Europe to arms against a nation of which he was the constitutional chief, and a combination of Princes justly suspected of wishing to seize upon a part of his dominions, stood in a situation which would have perplexed the most skillful statesman; and it is no proof of incapacity that he fell a sacrifice to circumstances which might have overwhelmed any known measure of human ingenuity. Addresses were crowding into the Assembly, disapproving the conduct of the court. M. Montmorin resigned; M. Delessart succeeded him; and M. Cahier de Gerville became minister of the interior. M. du Portail resigned also, and M. Narbonne succeeded him as minister of war. In the month of November, M. Bailly's mayoralty terminated; and the once popular La Fayette appeared as a candidate to succeed him. But he was successfully opposed by M. Petion, a violent Jacobin, and a declared republican, who was elected mayor of Paris by a great majority.

At this period the moderate men, who were friends of the constitution, attempted to counteract the influence of the Jacobin club by the establishment of a similar one. It derived its name from the vacant convent of the *Feuillans*, in which it assembled. The most active members of the Constituent Assembly belonged to it, such as M. M. D'Andre, Barnave, the Lameths, Du Port, Rabaud, Sieyes, Chapelier, Thouret, Labord, Taleyrand, Montesquieu, Beaumetz, &c. The Jacobins contrived to excite a riot at the place of their meeting, which was in the vicinity of the hall of the National Assembly. This afforded a pretext for applying to the Assembly for the removal of the new club. The Assembly showed their disposition, by complying with this request.

At the end of this year, the kingdom of France was by no means prosperous. The public revenue had fallen far short of the expenditure. The emigrant nobility had carried out of the kingdom the greater part of the current coin, and a variety of manufacturers, who depended upon their ostentatious luxury, were reduced to much distress. The dispositions of foreign courts appeared very doubtful. The new year, however, opened with delusive prospects of tranquillity.—The German Princes appeared satisfied with the mode of compensation which the French had offered for the loss of their possessions in Alsace and Lorraine. The Prince of Lowestein accepted of an indemnification.—The Princes of Hohenlohé and Salm-Salm declared themselves ready to treat upon the same terms. Prince

Maximilian, and the Dukes of Wirtemberg and Deux-Ponts, freely negotiated. It is unnecessary to state in detail the subterfuges employed, in the mean time, by the crafty Leopold, for amusing the French with the appearances of peace. M. Delessart, minister for foreign affairs, fell a sacrifice to them, and probably to the undecided character of Louis. He was accused by M. Brissot of not having given timely notice to the National Assembly of the dispositions of foreign powers, and of not pressing proper measures for securing the honour and safety of the nation. A decree of accusation passed against him in his absence. He was apprehended, tried by the high national court at Orleans, and executed in consequence of its sentence.

The sudden death of Leopold on the first of March gave rise to a transient hope that peace might still be preserved. A suspicion of poison fell upon the French, but it was removed by the detail of his disease that was speedily published. On the 16th of the same month, the King of Sweden was wounded by a nobleman of the name of Ankerstrom, and died on the 29th. This enterprising Prince had overturned the constitution of his own country, and he had formed the project of conducting in person his troops to the frontiers of France, and of commanding or accompanying the combined armies of Europe in their attempt to avenge the cause of insulted royalty. It was in a great measure to counteract this scheme that he was assassinated.

The sudden fall, however, of these two enemies rather accelerated than retarded the meditated hostilities. The young King of Hungary, who succeeded to the empire, made no secret either of his own intentions or of the existence of a *concert of Princes* against France. M. Dumourier was now at the head of the war-office, M. Rolland was minister of the interior, and M. Claviere minister of finance. The Jacobins were all-powerful. The Court gave way to the torrent. The property of the emigrants was confiscated, reserving the rights of creditors. The Imperial minister, Prince Kaunitz, demanded three things of France; 1st, The restitution of their feudal rights to the German Princes; 2^{dly}, To restore Avignon to the Pope, the inhabitants of which had some time before thrown off their allegiance, and prevailed with the Constituent Assembly to receive their country as a part of France; and 3^{dly}, Prince Kaunitz demanded, that "the neighbouring powers should have no reason for apprehension from the present weakness of the internal government of France." On receiving these demands, the king proposed a declaration of war, which was decreed by the National Assembly on the 20th of April, against the *King of Hungary and Bohemia*.

The French immediately began the war, by attacking in three different columns the Austrian Netherlands. M. Theobald Dillon advanced from Lille to Tournay, where he found a strong body of Austrians ready to receive him. The national troops, unaccustomed to sustain the fire of regular soldiers, were instantly thrown into confusion, and fled even to the gates of Lille. The cry of *treason* resounded on all sides; and their commander, an experienced and faithful officer, was murdered by his own soldiers and the mob. A second division of 10,000 men, under Lieutenant-General Biron, took possession of Quiverain on the 29th, and marched towards Mons. General Biron was here attacked by the

French
Revolution,
1792.

108
The death
of the em-
peror and
murder of
the king of
Sweden.

109
The empe-
ror's success
for openly
avows
warlike in-
tentions.

110
And the
Austrian
Nether-
lands are
unsuccess-
fully at-
tacked by
the French.

French
Revolution,
1792.

III
Two parties in Paris at this period, and the consequences.

the Austrians, whom he repulsed. Hearing, however, of the defeat of Dillon, he retreated. A third party advanced to Furnes, but afterwards withdrew. La Fayette at the same time advanced towards Bouvines, half way to Namur, from which he afterwards retreated. The whole of these expeditions were ill contrived, in as much as they divided the French undisciplined troops, and exposed them in small bodies to the attack of veteran forces. The Austrians were some time before they attempted to retaliate. At length, however, on the 11th of June, they attacked M. Gouvion, who commanded the advanced guard of La Fayette's army near Maubeuge. M. Gouvion was killed by a rolling bullet; but La Fayette himself having come up, the Austrians abandoned the field. In the mean time, matters were hastening in Paris towards a violent crisis. Two parties, both of which were hostile to the present constitution, had gradually been formed in the state. The one wished to give more effectual support to the royal authority, by establishing a *senate* or *two chambers*, to prevent the king's vote from being the sole check upon popular enthusiasm. The other party wished to set aside royalty altogether, and to hazard the bold experiment of converting France into a republic. These last were supported by the Jacobin club, which had now contrived to concentrate in itself an immense mass of influence. Innumerable popular societies were established in every town and village throughout the provinces. With these a regular correspondence was kept up by writing and by emissaries. Thus schemes and notions were instantaneously propagated through a great empire, and all the violent spirits which it contained were enabled to act in concert: But the more immediate engine of the republican party consisted of the immense population of the metropolis, whom they now endeavoured to keep in constant alarm. For this purpose they alleged, that an *Austrian Committee*, that is to say, a conspiracy in favour of the enemies of the country, existed among the friends of the court. M. M. Genfonné and Brissot even offered in the assembly to prove the existence of this pretended Austrian committee. A report was next circulated, that the king intended to abscond from the capital on the 23d of May. His majesty publicly contradicted these accusations as calumnies, but they made no small impression upon the minds of the public. New decrees were now made against the refractory clergy, but these his majesty refused to sanction. A proposal was also made and decreed in the assembly to form a camp of 20,000 men under the walls of Paris, and that for this levy every canton in the kingdom should contribute one horseman and four infantry. The national guard of Paris disliked the proposal, and the king gave to it his negative. Indeed at this time the king seems to have come to a resolution of standing out against the Jacobin party, to which he had for some time yielded. The ministry were therefore dismissed, excepting M. Dumourier, and others were appointed in their stead. By this event Dumourier lost the confidence of the Jacobin club. He saw his error, resigned his office, and joined the army. In the mean time a decree had been passed, authorising the manufactory of pikes for the purpose of arming cheaply the lower class of citizens. All means were used to render the king odious by inflammatory wri-

tings and harangues; and in both of these the noted incendiary Marat took the lead.

On the 20th of June M. Roederer, the Procureur General Syndic informed the national assembly, that, contrary to law, formidable bodies of armed men were preparing to present petitions to the king, and to the national assembly. A part of them speedily appeared with St Huruge and Santerre a brewer at their head. They marched through the hall in a procession that lasted two hours, at four o'clock in the afternoon, to the number of about 40,000. They surrounded the Thuilleries. The gates were thrown open; and on an attempt to break the door of the apartment, where the king then was, he ordered them to be admitted. His sister the princess Elizabeth never departed from his side during four or five hours that he was surrounded by the multitude, and compelled to listen to every indignity. All this while Petion, the mayor of Paris, was unaccountably absent. He at length, however, arrived, and also a deputation from the assembly. The queen, with her children and the princess de Lamballe, were in the mean time in the council-chamber, where, though protected from violence, they were yet exposed to much insult. At last, in consequence of the approach of evening, and of the entreaties of Petion, the multitude gradually dispersed.

The indignities suffered on this day by the royal family were in some respects not unfavourable to their cause. A great number of the most respectable inhabitants of the capital were ashamed of such proceedings. They complained of them severely in a petition to the assembly, and addresses to the same purpose were received from several departments. The directory of the department of Paris, at the head of which were M. Rochefaucault and M. Tulleyrand, published a declaration disapproving of the conduct of the mayor, and of M. Manuel the procureur of the commune, whom they afterwards suspended from their offices, although they were speedily restored by a decree of the assembly. At the same time, La Fayette leaving his army suddenly, appeared on the 26th at the bar of the national assembly. He declared that he came to express the indignation which the whole army felt on account of the events of the 20th: he called upon the assembly to punish the promoters of these events, and to dissolve the factious clubs. The sudden appearance of La Fayette threw the Jacobins into consternation, and from that period they never ceased to calumniate him.

On the 1st of July, on the motion of M. Jean de Brie, the assembly ordered a proclamation to be made, that *the country was in danger*. On the 6th, the king gave intimation that the king of Prussia was marching with 52,000 men to co-operate against France. The French arms were at this time somewhat successful in the Austrian Netherlands; but the cabinet speedily thought it necessary to order the armies to retreat: a measure which was afterwards publicly censured by Marshall Luckner.

On the 7th, a singular scene occurred in the national assembly. At the instant that M. Brissot was about to commence an oration, M. Lammourette bishop of Lyons requested to be heard for a few minutes. He expatiated on the necessity of union among the members of the assembly, and of sacrificing their passions and prejudices.

French
Revolution,
1792.

III
An armed mob marches through the assembly, surrounds the Thuilleries and insults the royal family.

III
The more respectable inhabitants are ashamed of such conduct.

III
The king of Prussia marches against France.

III
Moderate speech of the bishop of Lyons.

French
Revolution,
1792.

judices on the altar of their country. He concluded an animated address with these words, "Let all who hold in equal detestation a republic and two chambers, and who wish to maintain the constitution as it is, rise!" The words were scarcely pronounced when the whole assembly started from their seats. Men of all parties solemnly embraced each other, and protested their adherence to the constitution. A deputation announced this happy event to the king; who immediately came and congratulated them in a short speech, which was received with infinite applause. The only good effect, however, produced by this temporary agreement was, that the festival of the 14th of July, which was celebrated with the usual magnificence, passed over in tranquillity.

116
Manifesto
of the
duke of
Brunswick

On the 25th of July, the duke of Brunswick issued at Coblenz his celebrated manifesto. It declared the purpose of the intended invasion of France to be the restoration of the French king to full authority. It declared the national guard of France responsible for the preservation of tranquillity; and threatened with the punishment of death, as rebels to their king, those who should appear in arms against the allied powers. All men holding offices, civil or military, were threatened in the same manner, as well as the inhabitants of all cities. The city of Paris in particular, and the national assembly, were declared responsible for every insult which might be offered to the royal family. It was declared, that if they were not immediately placed in safety, the allies were resolved to inflict "on those who should deserve it the most exemplary and ever memorable avenging punishments, by giving up the city of Paris to military execution, and exposing it to total destruction; and the rebels who should be guilty of illegal resistance should suffer the punishments which they should have deserved." This sanguinary and imprudent manifesto operated as a warrant for the destruction of the unfortunate Louis XVI. It left no middle party in the nation. All who wished to preserve freedom in any form, and all who loved the independence of their country, were instantly united. At the same time, the reproaches cast on the king by the Jacobins now gained universal credit. The kings of Prussia and of Hungary told the French nation, that their monarch was secretly hostile to the constitution; and the restoration of him and his family to despotic power was made the sole pretence for a bloody and dangerous war.

117
Injurious to
Louis,

118
But advantageous to
the republican party,
who resolve to de-
pose him.

The republican party saw the advantage which they had now gained, and resolved upon the deposition of the king. The chief engine which they meant to employ in this service consisted of about 1500 men, who had come to Paris at the period of the confederation on the 14th of July, and therefore called *fédérés*, and who were also sometimes denominated *Marseillois*, from the place from which the greater number of them came. Next to these, dependence was placed in the populace of the suburbs of the capital. The designs of the republicans were not unknown to the court, and both parties were forming plans of operation. It is said that the royal party intended that the king and his family should suddenly leave the capital, and proceed to as great a distance as the constitution permitted. The republicans are said to have intended to seize the person of the king, and to confine him in the castle of Vincennes till a national convention should decide upon his

fate. Both allegations are probably true. Every motive which can influence the mind of man must have induced Louis to wish to be at a distance from the factious and sanguinary capital. And the subsequent conduct of the republicans authorise us to believe them capable of the worst crime that was laid to their charge.

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Revolution,
1792.

Various charges had been brought forward in the assembly against La Fayette, and the 8th of August was appointed for their discussion. In the mean time, on the 3d of August, Petion the mayor, at the head of a deputation from the sections of Paris, appeared at the bar, and in a solemn speech demanded the deposition of the king. The discussion of the accusation against La Fayette was considered as a trial of strength between the parties: he was acquitted, however, by a majority of nearly 200; and the republican party, despairing of carrying their point by a vote of the national assembly, resolved to have recourse to insurrection and force.

119
La Fayette
accused and
acquitted.

On the evening of the 9th of August, about 1500 gentlemen, officers of the army, and others, repaired to the palace, resolved to protect the royal family or to die in their defence: added to these were 700 Swiss guards, with a body of cavalry amounting to about 1000. Mandat, the commander of the national guards, a man who was firmly attached to the constitution, had procured 2400 of that body and 12 pieces of cannon. With such a force, it has been generally thought that, by vigorous and steady councils, the palace, which is a kind of castle, might have been successfully defended; and what is now called a revolution might have borne the name of a rebellion. Meanwhile the assembly declared its sittings permanent. Petion was at the palace late on the evening of the 9th. Some apprehensions were entertained, or pretended to be entertained, for his safety (for the whole of this business was, on the part of the republicans, the most infernal plot), and a deputation from the assembly brought him away. At midnight the tocsin or alarm bell was sounded, and the drums beat to arms through the city. At this instant a number of the most active leaders of the republican party assembled, and elected a new common council or *commune*. The persons thus irregularly chosen instantly took possession of the common hall, and drove out the lawful members; who, with that weakness with which men are apt to shrink from stations of responsibility in perilous times, readily gave place to the usurpers. The new commune sent repeated messages to M. Mandat, requiring his attendance upon important business. He was occupied in arranging the troops in the best order around the palace; but suspecting nothing, he went to the common hall, and was there astonished to find a different assembly from what he expected. He was abruptly accused of a plot to massacre the people, and ordered to prison; but as he descended the stairs, he was shot with a pistol, and Santerre was appointed in his stead to command the national guard.

120
Horrid plot
of the re-
publicans.

On this eventful night no person in the palace went to bed. About six o'clock in the morning of the 10th the king descended into the gardens to review the troops. He was received with shouts of *Vive le roi* excepting from the artillery, who shouted *Vive la nation*. The king returned to the palace, and the multitude continued to collect. The national guard seemed undetermined about what they were to do, as they assembled in divisions near the palace; and had a steady re-

sistance

French
Revolution,
1792.

121
The royal
family fly
for safety
to the hall
of the na-
tional as-
sembly.

istance been made from within, it is probable they would have joined the royal party. But towards eight o'clock M. Roederer procured admittance to the palace, and told the king that armed multitudes were assembling in hostile array around the Thuilleries; that the national guard was not to be depended upon; and that, in case of resistance, the whole royal family would most certainly be massacred. He therefore advised the king to seek protection in the hall of the national assembly. With this advice the king, with his usual facility of temper, was ready to comply; but the queen opposed with vehemence the humiliating proposal. Becoming gradually, however, alarmed for the safety of her children, she gave her consent; and the king and queen, the princess Elizabeth, with the prince and princess royal, went on foot to the hall of the assembly. "I am come hither (said his majesty) to prevent a great crime. Among you, gentlemen, I believe myself in safety." By an article of the constitution the assembly could not deliberate in presence of the king. The royal family were, therefore, placed in a narrow box separated from the hall by a railing, where they remained for 14 hours without any place to which they could retire for refreshment, excepting a very small closet adjoining. Here they sat listening to debates, in which the royal character and office were treated with every mark of insult.

When the king left the palace of the Thuilleries, he unfortunately forgot to order it to be immediately surrendered. He recollected this as soon as he reached the assembly, and sent orders for this purpose; but it was now too late. The insurgents amounted to about 20,000 effective men. They were drawn up in tolerable order by Westerman a Prussian, and had about 30 pieces of cannon along with them. The gentlemen within the palace, who had assembled to protect the king's person, were now dispirited, and knew not what part to act. The commander of the Swiss, M. Affry, was absent, and the captains knew not what to do; and the national guard had no leader in consequence of the death of Mandat. About nine o'clock the outer gates were forced open; and the insurgents formed their line in front of the palace. A bloody combat commenced chiefly between the Marseillois and the Swiss. After a brave resistance of about an hour, the Swiss were overpowered by numbers, and gave way. All of them that could be found in the palace were massacred; some even while imploring quarter on their knees. Others escaped into the city, and were protected by individuals. Of this brave regiment, however, only 200 survived; but every human being, even the lowest servants found in the palace, were put to death. The Swiss taken prisoners in various quarters were conducted to the door of the assembly, and taken by a decree under the protection of the state. But the sanguinary multitude insisted upon putting them to instant death; and the assembly would, in all probability, have been unable to protect them, had not the Marseillois interfered in their favour.

123
The royal
authority
suspended,
and royal
family im-
prisoned.

The suspension of the royal authority was now decreed, and the nation was invited to elect a *Convention* to determine the nature of its future government. On this uncommon occasion all Frenchmen of 21 years of age were declared capable of electing, and of being elected, deputies to the new national Convention. Com-

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missioners were, in the mean time, sent on the same evening to give to the armies a false and favourable account of these transactions. The royal family were sent to the old palace of the Temple in the midst of the city, to remain there under a strict guard; and all persons of rank who had been attached to them were seized and committed to the different prisons.

To give an idea of the temper of the people of Paris at this time, it is proper to remark, that at the same instant when the multitude with bloody fury were massacring the menial servants in the palace, and could scarcely be restrained from offering violence to the Swiss who were made prisoners, they would suffer no act of pillage to pass unpunished. Several attempts of this kind were accordingly followed by the instant death of the criminals. The plate, the jewels, and money found in the Thuilleries were brought to the national assembly, and thrown down in the hall. One man, whose dress and appearance bespoke extreme poverty, cast upon the table an hat full of gold.—But the minds of these men were elevated by enthusiasm; and they conceived themselves as at this moment the champions of freedom, and objects of terror to the kings of the earth.

In the mean time, the situation of France was extremely critical, and it appeared very doubtful if the new Convention would ever be suffered to assemble. La Fayette had accidentally got speedy notice of the events of the 10th of August. He advised the magistrates of the town of Sedan to imprison the commissioners from the national assembly when they should arrive there; which was accordingly done. He, at the same time, published an address to his army, calling upon them to support the king and the constitution; but finding that they were not to be depended upon, on the 19th August he left his camp in the night, accompanied only by his staff and a few servants. They took the rout of Rochefort in Liege, which was a neutral country; but were met by a party of the enemy, who took them prisoners, and they were detained in Prussian and Austrian dungeons till autumn 1794, when it is said that La Fayette himself made his escape. The severe treatment of this man was probably a considerable error in policy on the part of the allies. His fidelity to his king is very generally admitted; though some have entertained strong suspicions of his having acted a very base part to that unfortunate monarch; and in the British house of commons he has been called an abandoned ruffian. This expression is certainly too strong. His errors seem to have been those of the head rather than of the heart; and at all events, he should have been protected by the allies if for no other reason than to encourage subsequent desertions among the officers of the republican army.

To return from this digression. The commissioners were soon set at liberty at Sedan, and received with applause by the army of La Fayette. General Arthur Dillon at first entered into the sentiments of La Fayette; but the politic Dumourier diverted him from his purpose, and by this means regained his credit with the Jacobins, and was appointed commander in chief. The other generals, Biron, Montesquieu, Kellerman, and Custine, made no opposition to the will of the national assembly.

Meanwhile, the combined armies of Austria and Prussia had entered France. The duke of Brunswick's

Z

army

French
Revolution,
1792.

124

Bloody
temper of
the people
of Paris,
&c.

125

Critical si-
tuation of
the whole
kingdom.

126

La Fayette
withdraws
from the
army—His
fate and
character.

French army was above 50,000 strong. General Clairfait had joined him with 15,000 Austrians, and a considerable body of Hessians, along with 20,000 French emigrants; amounting in all to 90,000 men. To oppose these, Dumourier had only 17,000 men collected near the point from which the enemy were approaching in Luxembourg. The French emigrants had given the duke of Brunswick such an account of the distracted state of their own country, and of the pretended disaffection of all orders of men towards the ruling faction in Paris, that no resistance of any importance was expected. When the combined troops, consisting either of steady Austrian or Hungarian battalions, or of those well disciplined Prussians which the great Frederick had inured to the best military discipline, were reviewed in Germany before setting out on their march, it is said that the spectators, among whom the French cause was not unpopular, beheld them with anxiety and regret, and pitied the unhappy country against which this irresistible force was directed. The soldiers and their officers regarded themselves as departing for a hunting match, or an excursion of pleasure; and many of the usual accommodations of an army were ill attended to, such as hospitals, &c. The beginning of their progress into France justified these expectations. Longwy surrendered after a siege of 15 hours, although well fortified, possessed of a garrison of 3500 men, and defended by 71 pieces of cannon. The news of this event irritated the assembly so much, that they decreed, that, when retaken, the houses of the citizens should be razed to the ground; and, distrustful of the officers of the army, they decreed that the municipal officers of a town should hereafter have power to controul the deliberations of the council of war. Verdun was next summoned; and here the municipality compelled the governor M. Beaurepiere to surrender. That officer, disappointed and enraged, shot himself dead with a pistol in presence of the council, and on the 2d of September the Prussian troops entered the town.

128
Alarm at
Paris on
account of
their suc-
cess.

The news of this second capture, and of the approach of the Prussians, spread an instant alarm through Paris. It was proposed to raise a volunteer army, which should set out immediately to meet the enemy. The common council, which was now led by Robespierre, Danton, Marat, and others of the most sanguinary character, ordered the alarm-guns to be fired, and the populace to be summoned to meet in the Champ de Mars to enroll themselves to march against the enemy. The people assembled, and either in consequence of a premeditated plan, or, which is not very probable, of an instantaneous movement, a number of voices exclaimed, that "the domestic foes of the nation ought to be destroyed before its foreign enemies were attacked."

129
Horrid
massacres.

Parties of armed men proceeded without delay to the prisons where the non-juring clergy, the Swiss officers, and those confined since the 10th of August on account of practices against the state, were detained in custody. They took out the prisoners one by one, gave them a kind of mock trial before a jury of themselves, acquitted some few, and murdered the rest. Among these last was the princess de Lamballe. She was taken from her bed before this bloody tribunal, and massacred; her head was carried by the populace to the Temple, to be seen by the queen, whose friend she was.

These massacres lasted for two days, and upwards of 1000 persons were put to death. There is scarce any thing in history that can be represented as parallel to them; they were committed, it is said, by less than 300 men, in the midst of an immense city, which heard of them with horror, and in the vicinity of the national assembly, which, by going in a body, could have put an end to them. But such was the confusion and dismay of these two disgraceful days, that no man dared to stir from his own house; and every one believed that the whole city, excepting his own street, was engaged in massacre and bloodshed. The national guards were all ready at their respective posts, but no man directed them to act: and there is too much reason to suspect that Santerre and the chiefs of the commune connived, at least, at the transaction.

In the mean time, general Dumourier was taking the best measures to protract the march of the enemy till the army of Kellerman, consisting of 20,000 men, could join him from Lorraine, and that of Bournonville from Flanders, amounting to 13,000; together with whatever new levies Luekner might be able to send him from Chalons. The forest of Argonne extends from north to south upwards of 40 miles; it lay directly in the route of the duke of Brunswick, who must either force his way across it, or make a circuit of 40 miles by the pass of Grandpré on the north, or by Barleduc on the south. The pass that lay directly in his route was that of Biesme. After surveying Dillon's position here, he left a party of 20,000 men to watch it; and with the main body of his army took the circuitous rout by Grandpré on the north. Here Dumourier waited to receive him, and was attacked on the 12th and 13th without success: but on the 14th, the attack of the Prussians was irresistible, and Dumourier retreating, gave up the pass. On his march he was violently pressed by the advanced cavalry of the Prussians, that his army, at one time, was seized with a panic, and fled before 1500 men; who, if they had pushed their advantage, might have dispersed it. On the 15th, however, Dumourier encamped at St Meneshould, and began to fortify it. Bournonville's army joined Dumourier on the 17th. The duke of Brunswick formed a plan of attacking Kellerman before his junction could be completed. That general arrived on the 19th within a mile of Dumourier's camp; the projected attack took place; the Prussians manœuvred with their usual coolness and address; they attempted to surround Kellerman's army, but this could not be accomplished. The French troops preserved excellent order, while the national vivacity was constantly showing itself in their shouts and patriotic songs: 400 French were killed, and 500 wounded; the loss of the Prussians was much greater: and, in the face of the enemy, Kellerman joined Dumourier at the end of the engagement without opposition. At the time that the attack was made on the army of Kellerman, an attempt was made to force Dillon's camp at Biesme by the 20,000 men that had been left in its vicinity, but without success; and this large detachment was thus prevented from crossing the forest of Argonne and joining the duke of Brunswick. It is to be observed, that in these engagements the French owed their superiority chiefly to the excellence of their artillery; a circumstance which served to convince their enemies that they

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Revolution,
1792.

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State of
the French
army, and
conduct of
Dumou-
rier.

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The Prus-
sians oblige
him to re-
treat, but
do not fol-
low up
their ad-
vantage.

French had to contend with regular military bodies, and not with undisciplined multitudes, as they expected.

^{1792.} The duke of Brunswick encamped his army at La Lun, near the camp of Dumourier. And here the Prussians began to be in extreme distress both from sickness and famine. No temptation could induce the inhabitants of the country to carry provisions to the hostile camp, while at the same time the French army was abundantly supplied.

¹³² The Prussians distressed by sickness and famine.

Bournonville, with a body of 4000 men, intercepted several droves of cattle and other convoys of provisions destined for the Prussians. The rain fell in torrents, and the roads were uncommonly deep. Exposed to the cold, the moisture, and want of provisions, the Prussians rashly ate great quantities of the grapes of Champagne. The consequence of this was, that an epidemical distemper commenced and spread through the army to such an extent, that 10,000 men at one time were unfit for duty. The duke of Brunswick, however, still commanded a force much more numerous than that of Dumourier; and he has been much censured for not attacking his camp, and forcing him to engage. It has been said, that the veteran and numerous force which he commanded would have marched to certain victory against the raw troops that opposed them; that, having defeated Dumourier's army, there was nothing to oppose their march to Paris. But the duke of Brunswick had entered France upon the supposition, that in its present distracted state no regular army could be brought into the field against him, and that the people at large were hostile to the ruling faction. The contrary of all this had turned out to be true. He found himself in the midst of an hostile people, and opposed by skilful military chiefs. A defeat in such a situation would have brought certain ruin to his army; and even the loss sustained in the acquisition of a victory might have proved equally fatal. The remains of the French army would not fail to hang upon his rear; and from the disposition of the people it appeared impossible to ascertain to what amount that army might be suddenly increased. After proposing a truce, therefore, which lasted eight days, he commenced his retreat towards Grandpré, and no advantage was gained over him in the course of it. Verdun was retaken by the French on the 12th of October, and Longwy on the 18th; the siege of Thionville was at the same time raised. That small, but strong fortress, under the command of general Felix Wimpfen, had held in check an army of 15,000 men.

¹³³ Lille summoned and vigorously besieged by the Austrians, but in vain.

While the Prussians were advancing from the north-east, the Austrians under the duke of Saxe Teschen laid siege to Lille. The council-general of the commune answered the summons of the besiegers thus, "We have just renewed our oath to be faithful to the nation, and to maintain liberty and equality, or to die at our post. We will not perjure ourselves." Such was the cant of these men who had already perjured themselves by contributing to overturn the constitution which they had repeatedly sworn to defend. The Austrian batteries began to play upon the town on the 29th, and were chiefly directed against that quarter which was inhabited by the lower class of citizens, for the purpose of making them mutinous and seditious. This procedure was ill judged. The lower classes of mankind are always much accustomed to hardships, and they go farthest in

support of any enthusiastic principle they have been persuaded to adopt. Accordingly, though a great part of the city was reduced to a heap of ruins, the citizens of Lille became daily more obstinate. They received each other into the houses that were still standing, and every vault and cellar was occupied. Although upwards of 30,000 red-hot balls and 6000 bombs were thrown into the city, besides the efforts made by an immense battering train of artillery, yet the loss both to the garrison and people did not exceed 500 persons, most of whom were women and children. After a fortnight of fruitless labour the Austrians raised the siege.

French Revolution, 1792.

War had been declared against the king of Sardinia on account of the threatening appearances exhibited in that quarter. On the 20th of September general Montesquieu entered the territories of Savoy, and was received at Chambery and throughout the whole country with marks of unbounded welcome. On the 29th general Anselm, with another body of troops, took possession of Nice and the country around it. On the 30th general Custine advanced to Spire, when he found the Austrians drawn up in order of battle. He attacked and drove them through the city, taking 3000 of them prisoners. The capture of Worms succeeded that of Spire; Mentz surrendered by capitulation; and Franckfort fell into the hands of the French on the 23d. Out of this last place, however, they were afterwards driven on the 2d of December.

¹³⁴ War declared against the king of Sardinia, Savoy taken, &c.

On the 20th of September the French *National Convention* assembled. It was found to contain men of all characters, orders, and ranks. Many distinguished members of the *Constituting Assembly* were elected into it, and also several that had belonged to the *Legislative Assembly*; even foreigners were invited to become French legislators. The famous Thomas Paine and Dr Priestley of England were elected by certain departments; but the latter declined accepting. Clouts a Prussian, whom we formerly noticed as bringing a deputation to the bar of the constituent assembly, consisting of persons representing all the nations of the earth, was also chosen. The general aspect of the new convention showed that the republican party had acquired a decided superiority. On the first day of meeting M. Collot D'Herbois, who had formerly been an actor, ascended the tribune, and proposed the *eternal abolition of royalty in France*. The question was carried by acclamation, and the house adjourned. Messages were sent to all parts of the country to intimate the decree, and by the influence of the Jacobins they were everywhere received with applause. It was next day decreed, that all public acts should be dated by the year of the French republic; and all citizens were declared eligible to all the vacant offices and places. The rage of republicanism soon went so far, that the ordinary titles of Monsieur and Madame were abolished, and the appellation of *Citizen* substituted in their stead, as more suitable to the principles of liberty and equality.—It may be remarked, that in this last trifling circumstance an attachment to the form of speech to which they had been accustomed appears even in its abolition: For, although the Roman orators addressed their countrymen when assembled by the honourable appellation of *Citizens*, yet they never, in addressing an individual, called him Citizen Cato, or Citizen Cæsar, according to the mode now adopted in France.

¹³⁵ The national convention assembled.

¹³⁶ And decrees the eternal abolition of royalty in France.

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Revolution,
1792.
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Two op-
posite fac-
tions in the
convention.

It was soon discovered that the leading republicans had divided into two opposite factions. The one of these was called *Girondists*, because Vergniaud, Gensonné, Guadet, and some others of its leaders, were members from the department of La Gironde. The celebrated Condorcet belonged to this party; and they were sometimes denominated *Brissotines*, from M. Brissot de Warville their principal leader. They supported the ministry now in office, at the head of which was Roland; and the majority of the convention was obviously attached to them. In opposition to these was the smaller party of the *Mountain*; so called from its members usually sitting in the convention on the upper seats of the hall. They were men possessed of less personal respectability, and fewer literary accomplishments, but of daring and sanguinary characters, whom the revolution had brought into public notice. At the head of this party were Danton and Robespierre; and subordinate to these were Couthon, Bazire, Thuriot, Merlin de Thionville, St André, Camille Demoulins, Chabot, Collot D'Herbois, Sergent, Legendre, Fabre D'Eglantine, Panis, and Marat.

These two parties showed the diversity of their characters in the manner in which they treated the massacres of the 2d and 3d of September. The Brissotines, with the majority of the convention, wished to bring the murderers to trial; but the question was always eluded by the other party, with the assistance of the Jacobin club and of the populace.

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Decree a-
gainst the
emigrants,
&c.

On the 9th of October it was decreed, that all emigrants, when taken, should suffer death; and on the 15th of November, in consequence of an insurrection in the duchy of Deux Ponts, and an application on the part of the insurgents to the convention for aid, the following decree was passed: "The national convention declare, in the name of the French nation, that they will grant fraternity and assistance to all those people who wish to procure liberty; and they charge the executive power to send orders to the generals to give assistance to such people as have suffered, or are now suffering, in the cause of liberty." Of this decree foreign nations, with great reason, complained much, as will shortly appear.

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Battle of
Jemappe,
and surren-
der of the
Austrian
Nether-
lands.

To return to the military affairs of the new republic. On the 12th of October General Dumourier came to Paris, and was speedily sent to commence a winter campaign in the Netherlands. He suddenly attacked the Austrians at the village of Bossu, and drove them from their ground. On the 5th of November he came in fight of the enemy upon the heights of *Jemappe*. Three rows of fortifications arose above each other defended by 100 pieces of cannon. Their right was covered by the village and a river, and their left by thick woods. The French were by their own account 30,000, whilst others with great probability of truth compute them at double that number, and the number of the Austrians was at least 20,000. At seven in the morning of the following day a heavy cannonade commenced on both sides, and at noon a close attack was determined on by the French, whose right wing was commanded by Generals Bournonville and Dampierre, and the centre by Generals Egalité (son to the duke of Orleans who had assumed that name), Stetenboffe, Despoirets, and Drouet. The music played the popular march of the Marseillois, and the soldiers rushed on with enthusiasm, shouting "Vive la nation." The en-

gagement was warm and bloody; the French were twice repulsed; but their impetuosity was at last irresistible, and about two o'clock the enemy fled from their last entrenchments. The loss on both sides was very great, that of the Austrians amounting to 4000. This victory was decisive of the fate of the Netherlands. Mons and Brussels surrendered to Dumourier; Tournay, Malines, Ghent, and Antwerp, were taken possession of by General Labourdonnaye; Louvain and Namur were taken by General Valence; and the whole Austrian Netherlands, Luxembourg only excepted, fell into the hands of the French: Liege was taken on the 28th of November after a successful engagement, in which the Austrians lost 5 or 600 men and an immense train of artillery.

France was now in a situation not unusual in the history of those nations that either are free, or are attempting to become so; successful in all quarters abroad, but distracted by factions at home. The two parties in the convention were engaged in a struggle, which daily became more implacable. The party called the *Mountain* did not hesitate about the nature of the means they were to employ to bring about the ruin of their antagonists. They are even suspected of having, through the medium of Pache the war-minister, retarded the supply of the armies, to render the ruling party odious by want of success. They were for some time, however, unfortunate in this respect; and the daily news of victories supported with the public the credit of the Girondists. A new subject was therefore fallen upon, which was the question, how the dethroned king was to be disposed of? The moderate party wished to save him; and this was a sufficient reason for their antagonists to resolve upon his ruin. A committee was appointed to give in a report upon his conduct. A variety of accusations were brought against him; and the convention infamously resolved to act the part of accusers and of judges.

It was on the 11th of December when the ill-fated monarch was ordered to the bar of the convention: the act of accusation was read, and the king was summoned by the president, Barrere, to answer to each separate charge.

Pres. "Louis, the French nation accuses you of having committed a multitude of crimes to establish your tyranny, in destroying her freedom. You, on the 20th of June 1789, attempted the sovereignty of the people, by suspending the assemblies of their representatives, and expelling them with violence from the places of their sittings. This is proved in the process verbal entered at the Tennis-court of Versailles by the members of the constituent assembly. On the 23d of June you wanted to dictate laws to the nation; you surrounded their representatives with troops; you presented to them two royal declarations, subversive of all liberty, and ordered them to separate. Your own declarations, and the minutes of the assembly, prove these attempts. What have you to answer?"

Louis. "No laws were then existing to prevent me from it."

Pres. "You ordered an army to march against the citizens of Paris. Your satellites have shed the blood of several of them, and you would not remove this army till the taking of the Bastille and a general insurrection announced to you that the people were victorious. The

speeches

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Revolution,
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Violent
contests be-
tween the
Girondists
and the
Mountain.

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The king
brought to
trial.

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speeches you made on the 9th, 12th, and 14th of July to the deputations of the constituent assembly, shew what were your intentions; and the massacres of the Thuilleries rise in evidence against you.—What have you to answer?"

Louis. "I was master at that time to order the troops to march; but I never had an intention of shedding blood."

Pres. "After these events, and in spite of the promises which you made on the 15th in the constituent assembly, and on the 17th in the town-house of Paris, you have persisted in your projects against national liberty. You long eluded the execution of the decrees of the 11th of August, respecting the abolition of personal servitude, the feudal government, and tythes: you long refused acknowledging the rights of man: you doubled the number of the life-guards, and called the regiment of Flanders to Versailles: you permitted, in orgies held before your eyes, the national cockade to be trampled under foot, the white cockade to be hoisted, and the nation to be slandered. At last, you rendered necessary a fresh insurrection, occasioned the death of several citizens, and did not change your language till after your guards had been defeated, when you renewed your perfidious promises. The proofs of these facts are in your observations of the 18th of September, in the decrees of the 11th of August, in the minutes of the constituent assembly, in the events of Versailles of the 5th and 6th of October, and in the conversation you had on the same day with a deputation of the constituent assembly, when you told them you would enlighten yourself with their councils, and never recede from them.—What have you to answer?"

Louis. "I have made the observations which I thought just on the two first heads. As to the cockade, it is false; it did not happen in my presence."

Pres. "You took an oath at the federation of the 14th of July, which you did not keep. You soon tried to corrupt the public opinion, with the assistance of Talon who acted in Paris, and Mirabeau who was to have excited counter-revolutionary movements in the provinces.—What have you to answer?"

Louis. "I do not know what happened at that time; but the whole is anterior to my acceptance of the constitution."

Pres. "You lavished millions of money to effect this corruption, and you would even use popularity as a means of enslaving the people. These facts are the result of a memorial of Talon, on which you have made your marginal comments in your own hand-writing, and of a letter which Laporte wrote to you on the 19th of April; in which, recapitulating a conversation he had with Rivarol, he told you, that the millions which you had been prevailed upon to throw away had been productive of nothing. For a long time you had meditated on a plan of escape. A memorial was delivered to you on the 28th of February, which pointed out the means for you to effect it; you approve of it by marginal notes.—What have you to answer?"

Louis. "I felt no greater pleasure than that of relieving the needy: this proves no design."

Pres. "On the 28th a great number of the nobles and military came into your apartments in the castle of the Thuilleries to favour that escape: you wanted to

quit Paris on the 10th of April to go to St Claud.—What have you to answer?"

Louis. "This accusation is absurd."

Pres. "But the resistance of the citizens made you sensible that their distrust was great; you endeavoured to discard it by communicating to the constituent assembly a letter, which you addressed to the agents of the nation near foreign powers, to announce to them that you had freely accepted the constitutional articles, which had been presented to you; and, notwithstanding, on the 21st you took flight with a false passport. You left behind a protest against these self-same constitutional articles; you ordered the ministers to sign none of the acts issued by the National Assembly; and you forbade the minister of justice to deliver up the seals of state. The public money was lavished to insure the success of this treachery, and the public force was to protect it, under the orders of Bouillé, who shortly before had been charged with the massacre of Nancy, and to whom you wrote on this head, "to take care of his popularity, because it would be of service to you." These facts are proved by the memorial of the 23d of February, with marginal comments in your own hand-writing; by your declaration of the 20th of June, wholly in your own hand-writing; by your letter of the 4th of September 1790 to Bouillé; and by a note of the latter, in which he gives you an account of the use he made of 993,000 livres, given by you, and employed partly in trepanning the troops who were to escort you.—What have you to answer?"

Louis. "I have no knowledge whatever of the memorial of the 23d of February. As to what relates to my journey to Varennes, I appeal to my declaration to the commissaries of the constituent assembly at that period."

Pres. "After your detention at Varennes, the exercise of the executive power was for a moment suspended in your hands, and you again formed a conspiracy. On the 17th of July the blood of citizens was shed in the Champ de Mars. A letter, in your own hand-writing, written in 1790 to La Fayette, proves that a criminal coalition subsisted between you and La Fayette, to which Mirabeau acceded. The revision began under these cruel auspices; all kinds of corruptions were made use of. You have paid for libels, pamphlets, and newspapers, designed to corrupt the public opinion, to discredit the assignats, and to support the cause of the emigrants. The registers of Septeuil shew what immense sums have been made use of in these liberticide manoeuvres.—What have you to answer?"

Louis. "What happened on the 17th of July has nothing at all to do with me. I know nothing of it."

Pres. "You seemed to accept the constitution on the 14th of September; your speeches announced an intention of supporting it, and you were busy in overturning it, even before it was completed. A convention was entered into at Pilnitz on the 24th of July, between Leopold of Austria and Frederic-William of Brandenburg, who pledged themselves to re-erect in France the throne of absolute monarchy, and you were silent upon this convention till the moment when it was known by all Europe.—What have you to answer?"

Louis. "I made it known as soon as it came to my knowledge; besides, every thing that refers to this subject concerns the minister."

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Pres.

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Pres. "Arles had hoisted the standard of rebellion; you favoured it by sending three civil commissaries, who made it their business not to repress the counter-revolutionists, but to justify their proceedings.—What have you to answer?"

Louis. "The instructions which were given to the commissaries must prove what was their mission; and I knew none of them when the ministers proposed them to me."

Pres. "Avignon, and the county of Venaissin, had been united with France; you caused the decree to be executed; but a month after that time civil war desolated that country. The commissaries you sent thither helped to ravage it.—What have you to answer?"

Louis. "I do not remember what delay has been caused in the execution of the decree; besides, this occurrence has no personal reference to me; it only concerns those that have been sent, not those who sent them."

Pres. "Nîmes, Montauban, Mende, Jales, felt great shocks during the first days of freedom. You did nothing to stifle those germens of counter-revolution till the moment when Saillant's conspiracy became manifestly notorious.—What have you to answer?"

Louis. "I gave, in this respect, all the orders which were proposed to me by the ministers."

Pres. "You sent 22 battalions against the Marseillois, who marched to reduce the counter-revolutionists of Arles.—What have you to answer?"

Louis. "I ought to have the pieces referring to this matter, to give a just answer."

Pres. "You gave the southern command to Wittgenstein, who wrote to you on the 21st of April 1792, after he had been recalled: 'A few instants more, and I shall call around the throne of your Majesty thousands of French, who are again become worthy of the wishes you form for their happiness.'—What have you to answer?"

Louis. "This letter is dated since his recall; he has not been employed since. I do not recollect this letter."

Pres. "You paid your late life-guards at Coblenz; the registers of Septeuil attest this; and general orders signed by you prove that you sent considerable remittances to Bouille, Rochefort, Vauguyon, Choiseul, Beaupre, Hamilton, and the wife of Polignac.—What have you to answer?"

Louis. "When I first learned that my life-guards assembled beyond the Rhine, I stopped their pay: as to the rest, I do not remember?"

Pres. "Your brothers, enemies to the state, caused the emigrants to rally under their banners: they raised regiments, took up loans, and concluded alliances in your name: you did not disclaim them; but at the moment when you were fully certain that you could no longer cross their projects, your intelligence with them by a note, written by Louis Stanislaus Xavier, signed by your two brothers, was conceived in these words:

'I wrote to you, but it was by post, and I could say nothing. We are two here, who make but one; one in sentiments, one in principles, one in zeal of serving you. We keep silence; because, were we to break it too soon, it would injure you: but we shall speak as soon as we shall be certain of general support, and that moment is near. If we are spoken to on the

part of those people, we shall hear nothing; but if on your part, we will listen: we shall pursue our road straight. It is therefore desired that you will enable us to say something. Do not stand on ceremonies. Be easy about your safety: we only exist to serve you; we are eagerly occupied with this point, and all goes on well; even our enemies feel themselves too much interested in your preservation to commit an useless crime which would terminate in their own destruction. Adieu.

'L. S. XAVIER and
'CHARLES PHILIPPE.'

"What have you to answer?"

Louis. "I disowned all the proceedings of my brothers, according as the constitution prescribed me to do, and from the moment they came to my knowledge. Of this note I know nothing."

Pres. "The soldiers of the line, who were to be put on the war establishment, consisted but of 100,000 men at the end of December, you therefore neglected to provide for the safety of the state from abroad. Narbonne required a levy of 50,000 men, but he stopped the recruiting at 26,000, in giving assurances that all was ready; yet there was no truth in these assurances. Servan proposed after him to form a camp of 20,000 men near Paris; it was decreed by the legislative assembly; you refused your sanction.—What have you to answer?"

Louis. "I had given to the ministers all the orders for expediting the augmentation of the army: in the month of December last, the returns were laid before the Assembly. If they deceived themselves, it is not my fault."

Pres. "A flight of patriotism made the citizens repair to Paris from all quarters. You issued a proclamation, tending to stop their march; at the same time our camps were without soldiers. Dumourier, the successor of Servan, declared that the nation had neither arms, ammunition, nor provisions, and that the posts were left defenceless. You waited to be urged by a request made to the minister Lajard, when the legislative assembly wished to point out the means of providing for the external safety of the state, by proposing the levy of 42 battalions. You gave commission to the commanders of the troops to disband the army, to force whole regiments to desert, and to make them pass the Rhine, to put them at the disposal of your brothers, and of Leopold of Austria, with whom you had intelligence. This fact is proved by the letter of Toulougeon, governor of Franche Comté.—What have you to answer?"

Louis. "I know nothing of this circumstance; there is not a word of truth in this charge."

Pres. "You charged your diplomatical agents to favour this coalition of foreign powers and your brothers against France, and especially to cement the peace between Turkey and Austria, and to procure thereby a larger number of troops against France from the latter. A letter of Choiseul-Gouffier, ambassador at Constantinople, verifies the fact.—What have you to answer?"

Louis. "M. Choiseul did not speak the truth: no such thing has ever been."

Pres. "The Prussians advanced against our frontiers: your minister was summoned on the 3th of July to give an account of the state of our political relations with

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French Revolution, 1792. with Prussia; you answered, on the 10th, that 50,000 Prussians were marching against us, and that you gave notice to the legislative body of the formal acts of the pending hostilities, in conformity to the constitution. —What have you to answer?"

Louis. "It was only at that period I had knowledge of it: all the correspondence passed with the ministers."

Pref. "You entrusted Dabancourt, the nephew of Calonne, with the department of war; and such has been the success of your conspiracy, that the posts of Longwy and Verdun were surrendered to the enemy at the moment of their appearance. —What have you to answer?"

Louis. "I did not know that Dabancourt was M. Calonne's nephew. I have not divested the posts. I would not have permitted myself such a thing. I know nothing of it, if it has been so."

Pref. "You have destroyed our navy — a vast number of officers belonging to that corps had emigrated; there scarcely remained any to do duty in the harbours; meanwhile Bertrand was granting passports every day; and when the legislative body represented to you his criminal conduct on the 8th of March, you answered, that you were satisfied with his services. —What have you to answer?"

Louis. "I have done all I could to retain the officers. As to M. Bertrand, since the legislative assembly presented no complaint against him that might have put him in a state of accusation, I did not think proper to turn him out of office."

Pref. "You have favoured the maintenance of absolute government in the colonies; your agents fomented troubles and counter-revolutions throughout them, which took place at the same epoch when it was to have been brought about in France, which indicates plainly that your hand laid this plot. —What have you to answer?"

Louis. "If there are any of my agents in the colonies, they have not spoken the truth; I had nothing to do with what you have just mentioned."

Pref. "The interior of the state was convulsed by fanatics; you avowed yourself their protector, in manifesting your evident intention of recovering by them your ancient power. —What have you to answer?"

Louis. "I cannot answer to this; I know nothing of such a project."

Pref. "The legislative body had passed a decree on the 29th of January against the factious priests; you suspended its execution. —What have you to answer?"

Louis. "The constitution reserved to me the free right to refuse my sanction of the decrees."

Pref. "The troubles had increased; the minister declared, that he knew no means in the laws extant to arraign the guilty. The legislative body enacted a fresh decree, which you likewise suspended. —What have you to say to this?"

[Louis replied in the same manner as in the preceding charge.]

Pref. "The uncitizen-like conduct of the guards whom the constitution had granted you, had rendered it necessary to disband them. The day after, you sent them a letter expressive of your satisfaction, and con-

tinued their pay. This fact is proved by the treasurer of the civil list. —What have you to answer?"

Louis. "I only continued them in pay till fresh ones could be raised, according to the tenor of the decree."

Pref. "You kept near your person the Swiss guards: the constitution forbade you this, and the legislative assembly had expressly ordained their departure. —What have you to answer?"

Louis. "I have executed all the decrees that have been enacted in this respect."

Pref. "You had private companies at Paris, charged to operate movements useful to your projects of a counter-revolution. Dangremont and Gilles were two of your agents, who had salaries from the civil list. The receipts of Gilles, who was ordered to raise a company of 60 men, shall be presented to you. —What have you to answer?"

Louis. "I have no knowledge whatever of the projects laid to their charge: the idea of a counter-revolution never entered into my mind."

Pref. "You wished to suborn, with considerable sums, several members of the legislative and constituent assemblies. Letters from St Leon and others evince the reality of these deeds. —What have you to answer?"

Louis. "Several persons presented themselves with similar decrees, but I have waved them."

Pref. "Who are they that presented you with those projects?"

Louis. "The plans were so vague that I do not recollect them now."

Pref. "Who are those to whom you gave money?"

Louis. "I gave money to nobody."

Pref. "You suffered the French name to be reviled in Germany, Italy, and Spain, since you omitted to demand satisfaction for the bad treatment which the French suffered in those countries. —What have you to answer?"

Louis. "The diplomatical correspondence will prove the contrary; besides, this was a concern of the ministers."

Pref. "You reviewed the Swiss on the 10th of August at five o'clock in the morning; and the Swiss were the first who fired upon the citizens."

Louis. "I went on that day to review all the troops that were assembled about me; the constituted authorities were with me, the department, the mayor, and municipality; I had even invited thither a deputation of the national assembly, and I afterwards repaired into the midst of them with my family."

Pref. "Why did you draw troops to the castle?"

Louis. "All the constituted authorities saw that the castle was threatened; and as I was a constituted authority, I had a right to defend myself."

Pref. "Why did you summon the mayor of Paris in the night between the 9th and 10th of August to the castle?"

Louis. "On account of the reports that were circulated."

Pref. "You have caused the blood of the French to be shed."

Louis. "No, Sir, not I."

Pref. "You authorized Septeuil to carry on a

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considerable trade in corn, sugar, and coffee, at Hamburg. This fact is proved by a letter of Septeuil."

Louis. "I know nothing of what you say."

Pres. "Why did you affix a *veto* on the decree which ordained the formation of a camp of 20,000 men?"

Louis. "The constitution left to me the free right of refusing my sanction of the decrees; and even from that period I had demanded the assemblage of a camp at Soissons."

President, addressing the convention. "The questions are done with."—(To *Louis*)—"Louis, is there any thing that you wish to add?"

Louis. "I request a communication of the charges which I have heard, and of the pieces relating thereto, and the liberty of choosing counsel for my defence."

Valazé, who sat near the bar, presented and read to *Louis Capet* the pieces, viz. The memoir of *Laporte* and *Mirabeau*, and some others, containing plans of a counter-revolution.

Louis. "I disown them."

Valazé next presented several other papers, on which the act of accusation was founded, and asked the king if he recognized them. These papers were the following:

Valazé. "Letter of *Louis Capet*, dated June 29th 1790, settling his connections with *Mirabeau* and *La Fayette* to effect a revolution in the constitution."

Louis. "I reserve to myself to answer the contents"—(*Valazé* read the letter.)—"It is only a plan, in which there is no question about a counter-revolution; the letter was not to have been sent."

Valazé. "Letter of *Louis Capet*, of the 22d of April, relative to conversations about the Jacobins, about the president of the committee of finances, and the committee of domains; it is dated by the hand of *Louis Capet*."

Louis. "I disown it."

Valazé. "Letter of *Laporte*, of Thursday morning, March 3d, marked in the margin in the hand-writing of *Louis Capet* with March 3d 1791, implying a pretended rupture between *Mirabeau* and the Jacobins."

Louis. "I disown it."

Valazé. "Letter of *Laporte* without date, in his hand-writing, but marked in the margin by the hand of *Louis Capet*, containing particulars respecting the last moments of *Mirabeau*, and expressing the care that had been taken to conceal from the knowledge of men some papers of great concern which had been deposited with *Mirabeau*."

Louis. "I disown it as well as the rest."

Valazé. "Plan of a constitution, or revision of the constitution, signed *La Fayette*, addressed to *Louis Capet*, April 6th 1790, marked in the margin with a line in his own hand-writing."

Louis. "These things have been blotted out by the constitution."

Valazé. "Do you know this writing?"

Louis. "I do not."

Valazé. "Your marginal comments?"

Louis. "I do not."

Valazé. "Letter of *Laporte* of the 19th of April, marked in the margin by *Louis Capet* April 19, 1791, mentioning a conversation with *Rivarol*."

Louis. "I disown it."

Valazé. "Letter of *Laporte*, marked April 16, 1791, in which it seems complaints are made of *Mirabeau*, the abbé *Perigord*, *André*, and *Beaumetz*, who do not seem to acknowledge sacrifices made for their sake."

Louis. "I disown it likewise."

Valazé. "Letter of *Laporte* of the 23d of February 1791, marked and dated in the hand-writing of *Louis Capet*; a memorial annexed to it, respecting the means of his gaining popularity."

Louis. "I know neither of these pieces."

Valazé. "Several pieces without signature, found in the castle of the *Thuilleries*, in the gap which was shut in the walls of the palace, relating to the expences to gain that popularity."

President. "Previous to an examination on this subject, I wish to ask a preliminary question: Have you caused a press with an iron door to be constructed in the castle of the *Thuilleries*, and had you your papers locked up in that press?"

Louis. "I have no knowledge of it whatever."

Valazé. "Here is a day-book written by *Louis Capet* himself, containing the pensions he has granted out of his coffer from 1776 till 1792, in which are observed some douceurs granted to *Acloque*."

Louis. "This I own, but it consists of charitable donations which I have made."

Valazé. "Different lists of sums paid to the Scotch companies of *Noailles*, *Gramont*, *Montmorency*, and *Luxembourg*, on the 9th of July 1791."

Louis. "This is prior to the epoch when I forbade them to be paid."

Pres. "Louis, where had you deposited those pieces which you own?"

Louis. "With my treasurer."

Valazé. "Do you know these pension-lists of the life-guards, the one hundred Swiss, and the king's guards for 1792?"

Louis. "I do not."

Valazé. "Several pieces relative to the conspiracy of the camp of *Jales*, the originals of which are deposited among the records of the department of *L'Ar-dèche*."

Louis. "I have not the smallest knowledge of them."

Valazé. "Letter of *Bouillé*, dated *Mentz*, bearing an account of 993,000 livres received of *Louis Capet*."

Louis. "I disown it."

Valazé. "An order for payment of 168,000 livres, signed *Louis*, indorsed *Le Bonneirs*, with a letter and billet of the same."

Louis. "I disown it."

Valazé. "Two pieces relative to a present made to the wife of *Polignac*, and to *Lavaugnyon* and *Choiseul*."

Louis. "I disown them as well as the others."

Valazé. "Here is a note signed by the two brothers of the late king, mentioned in the declaratory act."

Louis. "I know nothing of it."

Valazé. "Here are pieces relating to the affair of *Choiseul-Gouffier* at *Constantinople*."

Louis. "I have no knowledge of them."

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Valazé. "Here is a letter of the late king to the bishop of Clermont, with the answer of the latter, of the 16th of April 1791."

Louis. "I disown it."

President. "Do you not acknowledge your writing and your signet?"

Louis. "I do not."

President. "The seal bears the arms of France."

Louis. "Several persons made use of that seal."

Valazé. "Do you acknowledge this list of sums paid to Gilles?"

Louis. "I do not."

Valazé. "Here is a memorandum for indemnifying the civil list for the military pensions; a letter of Dufresne St Leon, which relates to it."

Louis. "I know none of these pieces."

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He is allowed to nominate his own counsel;

When the whole had been investigated in this manner, the president, addressing the king, said, "I have no other questions to propose—have you any thing more to add in your defence?"—"I desire to have a copy of the accusation (replied the king), and of the papers on which it is founded. I also desire to have a counsel of my own nomination." Barrere informed him, that his two first requests were already decreed, and that the determination respecting the other would be made known to him in due time.

It would have been an excess of cruelty to refuse a request so reasonable in itself; it was therefore decreed that counsel should be allowed to the king, and his choice fell upon M. M. Tronchet, Lamoignon Maleherbes, and Deseze; he had previously applied to M. Target, who excused himself on account of his age and infirmity. On the 26th of December, the king appeared for the last time at the bar of the convention; and M. Deseze read a defence which the counsel had prepared, and which was equally admired for the solidity of the argument and the beauty of the composition.

When the defence was finished, the king arose, and holding a paper in his hand, pronounced in a calm manner, and with a firm voice, what follows: "Citizens, you have heard my defence; I now speak to you, perhaps for the last time, and declare that my counsel have asserted nothing to you but the truth; my conscience reproaches me with nothing: I never was afraid of having my conduct investigated; but I observed with great uneasiness, that I was accused of giving orders for shedding the blood of the people on the 10th of August. The proofs I have given through my whole life of a contrary disposition, I hoped would have saved me from such an imputation, which I now solemnly declare is entirely groundless."

143
But is condemned to death by a small majority.

The discussion was fatally closed on the 16th of January. After a sitting of near 34 hours, the punishment of death was awarded by a small majority of the convention, and several of these differed in opinion from the rest, respecting the time when it should be inflicted; some contending that it should not be put in execution till after the end of the war, while others proposed to take the sense of the people, by referring the sentence to the primary assemblies.

M. Deseze then solemnly invoked the assembly in the name of his colleagues, to consider by what a small majority the punishment of death was pronounced against the dethroned monarch. "Do not afflict France (added this eloquent advocate) by a judgment that will appear terrible to her, when five voices only were

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presumed sufficient to carry it." He appealed to eternal justice, and sacred humanity, to induce the convention to refer their sentence to the tribunal of the people. "You have either forgotten or destroyed (said the celebrated M. Tronchet) the lenity which the law allows to criminals, of requiring at least *two-thirds* of the voices to constitute a definitive judgment."

The sentence was ordered to be executed in twenty-four hours.

The king and his family had been for some time kept separate from each other; but he was now allowed to see them, and to choose an ecclesiastic to attend him. The meeting, and, above all, the separation from his family, was tender in the extreme. On Monday the 21st January, at eight o'clock in the morning, the unfortunate monarch was summoned to his fate. He ascended the scaffold with a firm air and step. Raising his voice, he said, "Frenchmen, I die innocent; I pardon all my enemies; and may France"—at this instant the inhuman Santerre ordered the drums to beat, and the executioners to perform their office. When they offered to bind his hands, he started back as if about to resist; but recollected himself in a moment, and submitted. When the instrument of death descended, the priest exclaimed, "Son of St Louis, ascend to heaven." The bleeding head was held up, and a few of the populace shouted *Vive la Republique*. His body was interred in a grave that was filled up with quicklime, and a guard placed around till it should be consumed.

Thus fell Louis XVI. He possessed from nature a good understanding, which, however, was blunted by the early indulgences of a court. He had a strong sense of justice, and his humanity was perhaps extreme. One defect rendered his virtues of little value, which was the possession of an irresolute and unsteady character. Unambitious, and easily advised, he was without difficulty induced to change his purposes, especially by his queen, whose connection with the house of Austria had always tended to render his counsels unpopular. Whether he was or was not connected with the foreign invaders of his country, posterity must decide; but all men of sense and moderation must be convinced that he was murdered by a band of ruffians. Indeed a sentence so infamous, and in all respects unjust, is not to be found in the records of history. The greater part of the charges brought against him were trifling. Those which seem to be of importance relate to conduct authorized by the constitution under which he acted; and that constitution declared his person inviolable. The severest punishment that he could incur by law, was not death, but deposition; and there is no doubt, that in putting him to death the French nation broke the social compact which their representatives made with him. In a political view, this tragical event was injurious to the republican cause throughout Europe. No man out of France ventured to justify it; and in all countries it excited the most violent indignation against the rulers of the new republic.

145
Character of this unfortunate monarch.

New enemies were now hastening to join the general league against France. We do not mean here to enter into a detail of the political struggles that occurred in any other country, than that in the narrative of whose revolution we are now engaged. It will therefore only be necessary to remark in general, that the British government at this time thought itself endangered by the propagation of those speculative opinions which had overturned

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Rupture with Great Britain.

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Grounds of
the quarrel
on the part
of Great
Britain.

overturned the French monarchy. Almost all the men of property in the kingdom concurred with the ministry in thinking a war with France necessary for the purpose of securing the constitution at home. After the 10th of August the British minister had been recalled; but the new republic still suffered the former ambassador from France, M. Chauvelin, to remain in England. The ostensible grounds of quarrel on the part of Great Britain were chiefly two; the decree of the 15th of November 1792, by which it was truly observed that encouragement to rebellion was held out to the subjects of every state, and that war was thereby waged against every established government. Of this decree the French executive council gave explanations, denying the fairness of the interpretation put upon it, and alleging, that the intention of the convention was only to give aid to such countries as *had already* acquired their freedom, and by a declaration of the general will requested aid for its preservation. But this explanation cannot be admitted. The decree expressly says, that the French nation will *grant assistance to all who wish to procure liberty*; and when it is considered what their notions of liberty are, it cannot be doubted but that their intention was to excite rebellion in foreign nations. The second point of dispute referred to the opening of the Scheldt. This river runs from Brabant through the Dutch territory to the sea. The Dutch had shut up the mouth of it, and prevented any maritime commerce from being carried on by the people of Brabant by means of the river. To render themselves popular in Brabant, the French had declared, that they would open the navigation of the Scheldt. But Great Britain had some time before bound herself by treaty with the Dutch to assist them in obstructing this navigation, and now declared to the French, that the project of opening the Scheldt must be renounced if peace with Great Britain was to remain. The French alleged, that by the law of nations navigable rivers ought to be open to all who reside on their banks; but that the point was of no importance either to France or England, and even of very little importance to Holland; that if the people of Brabant themselves chose to give it up, they would make no objection. It has been thought remarkable, that the Dutch gave themselves no trouble about the matter. They did not ask the assistance of England; and with that coolness which is peculiar to their character, the merchants individually declared, that if the Scheldt was opened, they could manage their commerce as well at Antwerp as at Amsterdam. But in all this there is nothing strange. Among the Dutch were many republicans, who wished for the downfall of the stadtholder. These rejoiced at every thing which distressed him, or had a tendency to render his office useless in the eyes of the people. Others, who thought differently, were afraid to speak their sentiments, as Dumourier was in their neighbourhood with a victorious army. The result of the whole was, that M. Chauvelin was commanded by the British government to leave this country. The French executive council gave powers to another minister, M. Maret, to negotiate, and requested a passport for him; but he was not suffered to land. The haughty republicans having thus far humbled themselves before the British government, at last, on the 1st of February 1793, on the motion of Brissot, the national convention decreed, among other articles, that "George king of England had never ceased since the revolution

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War declared
against
the king of
England
and stadtholder
of Holland,

of the 10th of August 1792 from giving to the French nation proofs of his attachment to the concert of crowned heads; that he had drawn into the same lake the stadtholder of the United Provinces; that, contrary to the treaty of 1783, the English ministry had granted protection to the emigrants and others who have openly appeared in arms against France; that they have committed an outrage against the French republic, by ordering the ambassador of France to quit Great Britain; that the English have stopped divers boats and vessels laden with corn for France, whilst, at the same time, contrary to the treaty of 1786, they continue the exportation of it to other foreign countries; that to thwart more efficaciously the commercial transactions of the republic with England, they have by an act of parliament prohibited the circulation of assignats. The convention therefore *declare*, that in consequence of these acts of hostility and aggression, the French republic is at war with the king of England and the stadtholder of the United Provinces."

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The absurdity of pretending that any treaty with France made in 1783 could be violated by protecting the emigrants who fled from the fury of the convention, must be obvious to every reader. The convention was itself a rebellious usurpation of the government with which such a treaty was made. The prohibition of assignats was certainly contrary to no law, and was sanctioned by every motive of expediency, unless the convention could prove that all nations were bound by the law of nature to risk their own credit upon the credit of the French republic.

About a fortnight after this absurd declaration against Britain, war was likewise declared against Spain; and in the course of the summer France was at war with all Europe, excepting only Switzerland, Sweden, Denmark, and Turkey.

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And against
Spain.

In the mean time General Dumourier, who was proceeding agreeably to his orders, made an attack upon Holland; but in doing this he dispersed his troops in such a manner as to expose them much to any attack on the side of Germany. He commanded General Miranda to invest Maastricht, while he advanced to block up Breda and Bergen-op-zoom. The first of these places, viz. Breda, surrendered on the 24th of February; Klundert was taken on the 26th; and Gertruydenberg on the 4th of March. But here the triumphs of Dumourier ended. The sieges of Williamstadt and Bergen-op-zoom were vigorously but unsuccessfully pressed. On the 1st of March General Clairfait having passed the Roer, attacked the French posts, and compelled them to retreat with the loss of 2000 men.

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Progress of
Dumourier.

The following day the archduke attacked them anew with considerable success. On the 3d the French were driven from Aix-la-Chapelle, with the loss of 4000 men killed and 1600 taken prisoners.

The siege of Maastricht was now raised, and the French retreated to Tongres, where they were also attacked and forced to retreat to St Tron. Dumourier here joined them, but did not bring his army along with him from the attack upon Holland. After some skirmishes a general engagement took place at Neerwinden. It was fought on the part of the French with great obstinacy; but they were at length overpowered by the number of their enemies, and perhaps also by the treachery of their commander. This defeat was fatal. The French lost 3000 men, and 6000 immediately

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He is de-
feated.

^{1793.} French Revolution, immediately deserted and went home to France. Dumourier continued to retreat, and on the 22d he was again attacked near Louvain. He now, through the medium of Colonel Mack, came to an agreement with the Imperialists that his retreat should not be seriously interrupted. It was now fully agreed between him and the Imperialists, that while the latter took possession of Condé and Valenciennes, he should march to Paris, dissolve the convention, and place the son of the late king upon the throne.

¹⁵² And joins the allies:

The rapid retreat and successive defeats of General Dumourier rendered his conduct suspicious. Commissioners were sent from the executive power for the purpose of discovering his designs. They dissembled, and pretended to communicate to him a scheme of a counter-revolution. He confessed his intention of dissolving the convention and the Jacobin club by force, which he said would not exist three weeks longer, and of restoring monarchy. On the report of these commissioners the convention sent Bournonville the minister of war to supersede and arrest Dumourier, along with Camus, Blancal, La Marque, and Quinette, as commissioners. The attempt on the part of these men was at least hazardous, to say no more of it; and the result was, that on the first of April Dumourier sent them prisoners to General Clairfait's head quarters at Tournay as hostages for the safety of the royal family. He next attempted to seduce his army from their fidelity to the convention; but he speedily found that he had much mistaken the character of his troops. Upon the report that their general was to be carried as a criminal to Paris, they were seized with sudden indignation; but when they found that an attempt was making to prevail with them to turn their arms against their country, their sentiments altered. On the 5th of April two proclamations were issued; one by General Dumourier, and the other by the prince of Saxe Cobourg, declaring that their only purpose was to restore the constitution of 1789, 1790, and 1791. Prince Cobourg announced that the allied powers wished merely to co-operate with General Dumourier in giving to France her constitutional king and the constitution she had formed for herself, declaring, on his word of honour, that he came not to the French territory for the purpose of making conquests. On the same day Dumourier went to the advanced guard of his own camp at Maulde. He there learned that the corps of artillery had risen upon their general, and were marching to Valenciennes; and he soon found that the whole army had determined to stand by their country. Seven hundred cavalry and 800 infantry was the whole amount of those that deserted with Dumourier to the Austrians, and many of them afterwards returned.

¹⁵³ But his army refuse to act with him.

¹⁵⁴ Proclamations of the Imperial commander in chief.

¹⁵⁵ State of France at this period

By the defection of Dumourier, however, the whole army of the north was dissolved, and in part disbanded, in presence of a numerous, well-disciplined, and victorious enemy. The Prussians were at the same time advancing on the Rhine with an immense force, and about to commence the siege of Mentz. In the interior of the republic more serious evils if possible were arising. In the departments of La Vendée and La Loire, or the Provinces of Brittany and Poitou, immense multitudes of emigrants and other royalists had gradually assembled in the course of the winter. They professed to act in the name of Monsieur, as regent of France.

About the middle of March they advanced against Nantz to the amount of 40,000. In the beginning of April they defeated the republicans in two pitched battles, and possessed themselves of 50 leagues of country. They even threatened by their own efforts to shake the new republic to its foundation. On the 8th of April a congress of the combined powers assembled at Antwerp. It was attended by the prince of Orange and his two sons, with his excellency Vander Spiegel, on the part of Holland; by the duke of York and Lord Auckland on the part of Great Britain; by the prince of Saxe Cobourg, Counts Metterinch, Starenberg, and Mercy Dargenteau, with the Prussian, Spanish, and Neapolitan envoys. It was here determined to commence active operations against France. The prince of Cobourg's proclamation was recalled, and a scheme of conquest announced.

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¹⁵⁶ Congress of the combined powers.

Commissioners from the convention now set up the standard of the republic anew, and the scattered battalions flocked around it. General Dampierre was appointed commander, and on the 13th he was able to resist a general attack upon his advanced posts. On the 14th, his advanced guard yielded to superior numbers, but on the 15th was victorious in a long and well-fought battle. On the 23d the Austrians were again repulsed, and on the 1st of May General Dampierre was himself repulsed in an attack upon the enemy. On the 8th another engagement took place, in which the French general was killed by a cannon ball. On the 23d a very determined attack was made by the allies upon the French fortified camp of Famars, which covered the town of Valenciennes. The French were overcome, and in the night abandoned their camp. In consequence of this the allies were enabled to commence the siege of Valenciennes; for Condé had been blockaded from the 1st of April.

¹⁵⁷ The republican army again assembled.

About the same time General Custine on the Rhine made a violent but unsuccessful attack upon the Prussians, in consequence of which they were soon enabled to lay siege to Mentz. The Corsican General Paoli revolted at this period; and the new republic, assaulted from without by the whole strength of Europe, was undermined by treachery and faction within.

¹⁵⁸ Revolt of Paoli.

While the country was in a state verging upon utter ruin, parties in the convention were gradually waxing more fierce in their animosity; and regardless of what was passing at a distance, they seemed only anxious for the extermination of each other. In the month of March, the celebrated *Revolutionary Tribunal* was established for the purpose of trying crimes committed against the state; and the Girondist party, the mildness of whose administration had contributed not a little to increase the evils of their country, began to see the necessity of adopting measures of severity. But the public calamities, which now rapidly followed each other in succession, were ascribed by their countrymen to their imbecillity or perfidy. This gave to the party of the *Mountain* a fatal advantage. On the 15th of April the communes of the 48 sections of Paris presented a petition, requiring that the chiefs of the Girondists therein named should be impeached and expelled from the convention. This was followed up on the 1st of May by another petition from the suburb of St Antoine. The Girondist party in the mean time impeached Marat, but he was acquitted by the jury at his trial. The

¹⁵⁹ State of parties in France, and the revolutionary tribunal established.

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Mountain, by the assistance of the Jacobin club, had now acquired a complete ascendancy over the city of Paris. The Girondists or Brissotines proposed therefore to remove the convention from the capital; and to prevent this, the *Mountain* resolved to make the same use of the people of the capital against the Girondist party that they had formerly done against the monarch on the 10th of August. It is unnecessary to state in detail all the tumults that occurred either in Paris or in the convention during the remaining part of the month of May. On the 31st, at four o'clock in the morning, the tocsin was sounded, the generale was beat, and the alarm guns fired. All was commotion and terror. The citizens flew to arms, and assembled round the convention. Some deputations demanded a decree of accusation against 35 of its members. The day, however, was spent without decision. On the afternoon of the 1st of June an armed force made the same demand. On the 2d of June this was repeated, the tocsin again sounded, and an hundred pieces of cannon surrounded the national hall. At last Barrere mounted the tribune. He was considered as a moderate man, and respected by both parties; but he now artfully deserted the Girondists. He invited the denounced members voluntarily to resign their character of representatives. Some of them complied, and the president attempted to dissolve the sitting; but the members were now imprisoned in their own hall. Henriot, commander of the armed force, compelled them to remain; and the obnoxious deputies, amounting to upwards of 90 in number, were put under arrest, and a decree of denunciation against them signed.

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The Mountain party
get the upper hand.

It is obvious, that on this occasion the liberties of France were trodden under foot. The minority of the national representatives, by the assistance of an armed force raised in the capital, compelled the majority to submit to their measures, and took the leading members prisoners. Thus the city of Paris assumed to itself the whole powers of the French republic; and the nation was no longer governed by representatives freely chosen, but by a minority of their members, whose sentiments the city of Paris and the Jacobin club had thought fit to approve of. Human history is a mass of contradictions. The *Mountain* party came into power by preaching liberty, and by violating its fundamental principles. How far the plea of political necessity may excuse their conduct, we shall not venture to decide explicitly. Certain it is, however, that they soon commenced a career of the most terrible energy both at home and abroad that is to be found in the annals of nations.

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Several cities and departments
revolt in consequence.

The first result of their victory in the capital was calamitous to the republic at large. Brissot and some other deputies escaped, and endeavoured to kindle the flames of civil war. In general, however, the influence of the Jacobin club, and of its various branches, was such, that the north of France adhered to the convention as it stood; but the southern departments were speedily in a state of rebellion. The department of Lyons declared the *Mountain* party outlawed. Marseilles and Toulon followed the example of Lyons, and entered into a confederacy, which has since been known by the appellation of *Federalism*. The departments of La Gironde and Calvades broke out into open revolt. In short, the whole of France was in a state of violent convulsion. Still, however, the enthusiastic garrisons

of Mentz and Valenciennes protected it against the immediate entrance of a foreign force, and allowed leisure for one of its internal factions to gain an ascendancy, and thereafter to protect its independence. In the mean time, the political enthusiasm of all orders of persons was such, that even the female sex did not escape its contagion. A young woman of the name of Charlotte Cordé, in the beginning of July, came from the department of Calvades to devote her life for what she thought the cause of freedom and of her country. She requested an interview with *Marat*, the most obnoxious of the *Mountain* party. Having obtained it, and conversed with him calmly for some time, she suddenly plunged a dagger in his breast, and walked carelessly out of the house. She was immediately seized and condemned. At the place of execution she behaved with infinite constancy, shouting *Vive la republique*. The remains of *Marat* were interred with great splendor, and the convention attended his funeral. His party perhaps derived advantage from the manner of his death, as it seemed to fasten the odious charge of assassination upon their antagonists, and gave them the appearance of suffering in the cause of liberty. The truth is, that assassination was sanctioned by both parties under pretence of defending the liberties of the republic.

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Marat murdered by a woman.

One of the first acts of the *Mountain* junto after their triumph was to finish the republican constitution. Previous to their fall, the Girondists had brought forward the plan of a constitution, chiefly the work of Condorcet; but it never was sanctioned by the convention, and was too intricate to be practically useful. The new constitution now framed, which was afterwards sanctioned by the nation, but has never yet been put in practice, abolishes the former mode of electing the representatives of the people through the medium of *electoral* assemblies, and appoints them to be chosen immediately by the *primary* assemblies, which are made to consist of from 200 to 600 citizens, each man voting by ballot or open vote at his option. There is one deputy for every 40,000 individuals, and population is the sole basis of representation. The elections take place every year on the 1st of May. Electoral assemblies are still retained for one purpose. Every 200 citizens in the primary assemblies name one elector; and an assembly of all the electors of the department is afterwards held, which elects candidates for the *executive council*, or ministry of the republic. The legislative body chooses out of this list of candidates the members of the executive council. One half of this council is renewed by each legislature in the last month of the session. Every law, after it is passed by the legislative body, is sent to the department. If in more than half of the departments the tenth of the primary assemblies of each have not objected to it, it becomes effectual. Trial by jury is established. National conventions may be called for altering the constitution, and *must* be called, if required by the tenth of the primary assemblies of each department in a majority of the departments.

The publication of this constitution procured no small degree of applause to the convention and the *Mountain* party. The rapidity with which it was formed (being only a fortnight) seemed to cast a just reproach upon the slowness of their antagonists, and it was regarded as a proof of their being decidedly se-

rious

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Revolution,
1793.
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Fall of
Condé and
Valencien-
nes.

rious in the cause of republicanism. No regard, how-
ever, has been paid to it by the convention, which has
declared itself permanent, nor indeed does it seem pos-
sible to carry it into execution.

We have mentioned that Condé was invested from
the beginning of April. It did not yield till the 10th
of July, when the garrison was so much reduced by fa-
mine and disease, that out of 4000 men, of which it
originally consisted, only 1500 were fit for service. The
eyes of all Europe were in the mean time fixed upon
the siege of Valenciennes. Colonel Moncrieff had con-
tended, that batteries ought immediately to be placed
under the walls without approaching it by regular pa-
rallels; but the Imperial engineer Mr Ferraris asserted,
that the work of the great Vauban must be treated with
more respect; and his opinion was adopted by the
council of war. The trenches were opened on the
14th of June. Few sallies were attempted by the gar-
rison, on account of the smallness of their number.
The inhabitants at first wished to surrender; but the
violence of the bombardment prevented their assem-
bling or giving much trouble on that head to General
Ferrand the governor. Much of the labour of the
siege consisted of mines and countermines. Some of
these having been successfully sprung by the allies, the
town was surrendered on the 27th of July by capitula-
tion to the Duke of York, who took possession of it in
behalf of the emperor of Germany. The siege of
Mentz was at the same time going on. It suffered
much from famine. At last, after an unsuccessful at-
tempt by the French army on the Rhine for its relief,
Mentz surrendered on the 22d of July.

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The allied
powers di-
vided as to
their fu-
ture pro-
ceeding.

At the termination of the siege of Valenciennes it is
said that the allied powers were at a loss how to pro-
ceed next. The Austrian commanders are said to have
presented two plans: The first was to penetrate to Pa-
ris by the assistance of the rivers which fall into the
Seine; the other was to take advantage of the conster-
nation occasioned by the surrender of Valenciennes, and
with 50,000 light troops to penetrate suddenly to Paris,
while a debarkation should be made on the coast of
Brittany to assist the royalists. The proposal of the
British ministry was, however, adopted, which was, to
divide the grand army, and to attack West Flanders,
beginning with the siege of Dunkirk. This determi-
nation proved ruinous to the allies. The French found
means to vanquish in detail that army, which they
could not encounter when united.

166
Unfortu-
nate conse-
quences of
the division
of their
forces.

It is said that the Duke of York was in secret cor-
respondence with Omeron the governor of Dunkirk;
but he was removed before any advantage could be ta-
ken of his treachery. On the 24th of August the
Duke of York attacked and drove the French outposts
into the town, after an action in which the Austrian
General Dalton was killed. A naval armament was
expected from Great Britain to co-operate in the siege,
but it did not arrive. In the mean time, a strong re-
publican force menaced the covering army of the allies,
which was commanded by General Freytag. He was
soon attacked and totally routed. The siege was rai-
sed. The British lost their heavy cannon and baggage,
with several thousand men; and the convention, belie-
ving that their General Houchard could have cut off
the Duke of York's retreat, tried and executed him for
this neglect of duty.

Prince Cobourg and General Clairfait in the mean
time unsuccessfully attempted to besiege Cambray and
Bouchain. Quesnoy was, however, taken by General
Clairfait on the 11th of September; and here finally
terminated for the present campaign the success of the
allies in the Netherlands.

A considerable part of the French army of the
north took a strong position near Maubeuge, where
they were blockaded by Prince Cobourg; but upon
the 15th and 16th of October he was repeatedly at-
tacked by the French troops under General Jourdan,
who succeeded Houchard. The French had now re-
covered their vigour. They brought into the field a
formidable train of artillery, in which were many 24-
pounders. Commissioners from the convention ha-
rangued the soldiers, threatened the fearful, and ap-
plauded the brave. Crowds of women, without confu-
sion, went through the ranks, distributing spirituous li-
quors in abundance, and carrying off the wounded.
The attacks were repeated and terrible on both sides;
but the Austrians had considerably the disadvantage,
and Prince Cobourg retired during the night. The
French now menaced maritime Flanders. They took
Furnes and besieged Nieuport. A detachment of
British troops ready to sail to the West Indies were
hastily sent to Ostend, and prevented for the present
the farther progress of the French.

Such was the multiplicity of the events that now oc-
curred in France, that it is difficult to state the out-
lines of them with any tolerable perspicuity. We have
already mentioned the extensive dissensions that occur-
red throughout the republic in consequence of the tri-
umph of the Mountain party on the 31st of May. The
department of Calvades was first in arms against the
convention under the command of General Felix Wimp-
fen; but before the end of July the insurrection was
quieted, after a few slight skirmishes. But the federa-
lism of the cities of Marseilles, Lyons, and Toulon, still
remained. Lyons was attacked on the 8th of August
by the conventional troops. Several actions followed,
which were attended with great loss, both on the part
of the assailants and of the besieged. The city was re-
duced almost to ruins; but it held out during the
whole month of September. The besieging General
Kellerman was removed from his command, on account
of his supposed inactivity; and the city surrendered on
the 8th of October to General Doppet, a man who had
lately been a physician. Such was the rage of party
zeal at this time, that the walls and public buildings of
Lyons were ordered to be destroyed, and its name
changed to that of *Ville Affranchie*. Many hundreds
of its citizens were dragged to the scaffold on account
of their alleged treasonable resistance to the convention.
The victorious party, wearied by the slow operation of
the guillotine, at last destroyed their prisoners in multi-
tudes, by firing grape-shot upon them. Such indeed
was the unrelenting character of the Mountain at this
time, not only here but through the whole republic,
that they themselves pretended not to excuse it, but
declared that terror was with them *the order of the
day*.

In the end of July General Cartaux was sent against
Marseilles. In the beginning of August he gained
some successes over the advanced federalist troops. On
the 24th he took the town of Aix, and the Marseillois

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Revolution,
1793.

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Lyons be-
sieged by
the conven-
tional
troops, and
taken.

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Unrelent-
ing charac-
ter of the
conquerors.

169
The Mar-
seillois obli-
ged to sub-
mit.
sub-

French
Revolution,
1793.
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Toulon
conditional
ly submits
to Lord
Hood,

submitted. But the leading people of the important town and harbour of Toulon entered into a negotiation, and submitted to the British admiral Lord Hood, under condition that he should preserve as a deposit the town and shipping for Louis XVII. and under the stipulation that he should assist in restoring the constitution of 1789. The siege of Toulon was commenced by General Cartaux in the beginning of September. It continued without much vigour during that and the whole of the succeeding month. Neapolitan, Spanish, and English troops, were brought by sea to assist in its defence. In the beginning of November, General Cartaux was removed to the command of the army in Italy, and General Dugommier succeeded him. General O'Hara arrived with reinforcements from Gibraltar, and took upon him the command of the town, under a commission from his Britannic majesty. On the 30th of November, the garrison made a powerful sally to destroy some batteries that were erecting upon heights which commanded the city. The French were surprised, and the allies succeeded completely in their object; but, elated by the facility of their conquest, the allied troops rushed forward in pursuit of the flying enemy, contrary to their orders, and were unexpectedly met by a strong French force that was drawn out to protect the fugitives. General O'Hara now came from the city to endeavour to bring off his troops with regularity. He was wounded in the arm and taken prisoner. The total loss of the allies in this affair was estimated at nearly one thousand men. The French had now mustered in full force around Toulon, and prepared for the attack. It was begun on the 19th of December in the morning, and was chiefly directed against Fort Mulgrave, defended by the British. This fort was protected by an entrenched camp, 13 pieces of cannon, 36 and 24 pounders, &c. 5 mortars, and 3000 troops. Such was the ardour of assault, that it was carried in an hour, and the whole garrison was destroyed or taken. The allies now found it impossible to defend the place; and in the course of the day embarked their troops, after having set on fire the arsenal and ships. A scene of confusion here ensued, such as has not been known in the history of modern wars. Crowds of people of every rank, age, and sex, hurried on board the ships, to avoid the vengeance of their enraged countrymen. Some of the inhabitants began to fire upon their late allies; others in despair were seen plunging into the sea, making a vain effort to reach the ships; or putting an end at once to their own existence upon the shore. Thirty-one ships of the line were found by the British at Toulon; thirteen were left behind; ten were burnt; four had been previously sent to the French ports of Brest and Rochefort, with 5000 republicans who could not be trusted; and Great Britain finally obtained by this expedition three ships of the line and five frigates.

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Who is at
length obli-
ged to eva-
luate it.

172
Proceed-
ings of the
royalists in
La Vendée

On the side of Spain the war produced nothing of importance; and in the mountainous country of Piedmont it went on slowly. Nice and Chambery were still retained by the French; but more terrible scenes were acting in other quarters. In La Vendée a most bloody war was persisted in by the royalists. In that quarter of the country the language of the rest of France is little understood. The people were superstitious, and had acquired little idea of the new opinions that had

lately been propagated in the rest of the empire. They were chiefly headed by priests, and regarded their cause as a religious one. Their mode of warfare usually was, to go on in their ordinary occupations as peaceable citizens, and suddenly to assemble in immense bands, inso-much that at one time they were said to amount to 150,000 men. They besieged Nantz and the city of Orleans, and even Paris itself was not thought altogether safe from their enterprises. The war was inconceivably bloody. Neither party gave quarter; and La Vendée proved a dreadful drain to the population of France. On the 28th of June, the conventional general Biron drove the royalists from Lucon; and Nantz was relieved by general Beysser. After some success, general Westerman was surprised by them, and compelled to retreat to Parthenay. In the beginning of August the royalists were defeated by general Rossignol; but on the 10th of that month, under Charette their commander in chief, they again attacked Nantz, but suffered a repulse. It would be tedious to give a minute detail of this obscure but cruel war. The royalists were often defeated and seemingly dispersed, but as often arose in crowds around the astonished republicans. At last, however, about the middle of October, they were completely defeated, driven from La Vendée, and forced to divide into separate bodies. One of these threw itself into the island of Noirmoutier, where they were subdued; another took the road of Maine and Brittany, where they struggled for some time against their enemies, and were at last cut to pieces or dispersed.

The royalists had long expected assistance from England; and an armament under the earl of Moira was actually fitted out for that service, but it did not arrive till too late, and returned home without attempting a landing.—The Mountain party always disgraced their successes by dreadful cruelties. Humanity is shocked, and history would almost cease to obtain credit, were we to state in detail the unrelenting cruelties which were exercised against the unfortunate royalists, chiefly by Carrier, a deputy from the convention, sent into this quarter with unlimited powers. Multitudes of prisoners were crowded on board vessels in the Loire, after which the vessels were sunk. No age nor sex was spared; and these executions were performed with every circumstance of wanton barbarity and insult.

On the side of the Rhine a great variety of events occurred during the months of August and September. Several engagements at first took place, in which the French were, upon the whole, successful. In September, however, Landau was invested by the combined powers; and it was resolved to make every possible effort to drive the French from the strong lines of Weissembourg, on the river Lauter. On the 13th of October, the Austrian general Wurmser made a grand attack upon these lines. The French say that their generals betrayed them, and suffered the lines to be taken almost without resistance. The general of the allies confessed that the lines might have held out for several days. The French retreated to Hagenau, from which they were driven on the 18th; and suffered two other defeats on the 25th and 27th. Some of the principal citizens of Strasbourg now sent a private deputation to general Wurmser, offering to surrender the town, to be preserved as a deposit to be restored to Louis

French
Revolution,
1793.

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Horrid
cruelty of
the Moun-
tain party.

174
Progress of
the allies on
the Rhine.

Louis

French
Revolution,
1793.

Louis XVII. General Wurmser refused to accept of it upon these terms, insisting upon an absolute surrender to his Imperial Majesty. In consequence of the delay occasioned by disagreement, the negotiation was discovered, and the citizens of Strasbourg engaged in the plot were seized by St Just and Lebas, commissioners from the convention, and brought to the scaffold. Prodigious efforts were now made by the French to recover their ground in this quarter. General Irembert was shot at the head of the army on the 9th of November, upon a charge, probably ill-founded, of treachery in the affair of the lines of Weissembourg. On the 14th, however, Fort Louis was taken by the allies, not without suspicion of treachery in the governor. But here the success of general Wurmser might be said to terminate. On the 21st the republican army drove back the Austrians, and penetrated almost to Hagenau. An army from the Moselle now advanced to co-operate with the army of the Rhine. On the 17th the Prussians were defeated near Sarhruck. Next day their camp at Bliescastel was stormed, and the French advanced to Deux Ponts. On the 29th and 30th the French were repulsed with great loss in two violent attacks made on the duke of Brunswick near Lautern. But it now appeared that the French had come into the field with a determination to conquer whatever it might cost. Every day was a day of battle, and torrents of blood were shed on both sides. The allies had the advantage of possessing the ground, which, in that quarter, at such a late season of the year, is very strong on account of its inequalities and morasses. In military skill, the French officers and those of the allies were perhaps nearly equal; but the French army was by far the most numerous; and although not a match in point of discipline, yet it derived no small superiority from the enthusiasm with which the troops were animated. On the 8th of December, under the command of general Pichegru, the French carried the redoubts which covered Hagenau by means of the bayonet.

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The French
at length
successful in
that quar-
ter.

This modern instrument of destruction, against which no defensive weapon is employed, is always most successful in the hands of the most intrepid; and it was now a dreadful engine in the hands of French enthusiasm.—The finest troops that ever Europe produced were unable to withstand the fury of the republicans, which seemed only to increase in proportion to the multitude of companions that they lost. On the 22d the allies were driven with immense slaughter from Hagenau, notwithstanding the immense works they had thrown up for their defence. The entrenchments on the heights of Reishoffen, Jaudershoffen, &c. were considered as more impregnable than those of Jemappe. They were stormed by the army of the Moselle and the Rhine, under generals Hoche and Pichegru. On the 23d and 24th, the allies were pursued to the heights of Wrotte. On the 26th, the entrenchments there were forced by the bayonet, after a desperate conflict. On the 27th, the republican army arrived at Weissembourg in triumph. General Wurmser retreated across the Rhine, and the duke of Brunswick hastily fell back to cover Mentz. The blockade of Landau, which had lasted four months, was raised. Fort Louis was evacuated by the allies, and Kaiserslautern, Germersheim, and Spires, submitted to the French.—During this last month of the year 1793, the loss of men on both sides

in this quarter was immense, and unexampled in the history of modern war. It is even said that it might amount to more than 70,000 or 80,000 men.

Thus far we have attended to the military affairs of the republic for some time past. Very violent efforts were in the mean time made at Paris by the new administration, established under the auspices of the Jacobin club, and of the party called the *Mountain*. The new republican constitution had been presented to the people in the primary assemblies, and accepted. The business, therefore, for which the convention was called together, that of forming a constitution for France, was at an end; and it was proposed that they should dissolve themselves, and order a new legislative body to assemble, according to the rules prescribed by that constitution. This was, no doubt, the regular mode of procedure; but the ruling party considered it as hazardous to convene a new assembly, possessing only limited powers, in the present distracted state of the country. It was indeed obvious, that France at this time stood in need of a dictatorship, or of a government possessed of more absolute authority than can be enjoyed by one that acts, or even pretends to act, upon the moderate principles of freedom. It was therefore determined that the convention should remain undissolved till the end of the war; and that a *revolutionary* government, to be conducted by its members, should be established, with uncontrolled powers. Committees of its own body were selected for the purpose of conducting every department of business. The chief of these committees was called the *committee of public safety*. It superintended all the rest, and gave to the administration of France all the secrecy and dispatch which have been accounted peculiar to a military government, together with a combination of skill and energy hitherto unknown among mankind. A correspondence was kept up with all the Jacobin clubs throughout the kingdom. Commissioners from the convention were sent into all quarters, with unlimited authority over every order of persons. Thus a government possessed of infinite vigilance, and more absolute and tyrannical than that of any single despot, was established; and the whole transactions and resources of the state were known to the rulers. On the 23d of August, Barrere, in name of the committee of public safety, procured the celebrated decree to be passed for placing the whole French nation in a *state of requisition* for the public service. "From this moment, (says the decree) till that when all enemies shall have been driven from the territory of the republic, all Frenchmen shall be in permanent readiness for the service of the army. The young men shall march to the combat; the married men shall forge arms, and transport the provisions; the women shall make tents and clothes, and attend in the hospitals; the children shall make lint of old linen; the old men shall cause themselves to be carried to the public squares, to excite the courage of the warriors, to preach hatred against the enemies of the republic; the cellars shall be washed to procure saltpetre; the saddle-horses shall be given up to complete the cavalry; the unmarried citizens, from the age of 18 to 25, shall march first, and none shall send a substitute; every battalion shall have a banner, with this inscription, *The French nation risen against tyrants*." The decree also regulates the mode of organizing this mass. A decree more ty-

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Revolution,
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176
Violent ef-
forts of the
Mountain
party.

177
France de-
creed to be
in a state of
requisition.

rannical

French
Revolution,
1793.

178
General
Custine
tried and
executed.

179
Murder of
the queen.

180
Execution
of the heads
of the Gi-
rondist
party,

181
And of the
Duke of
Orleans.

182
Executions
become
prodigious
ly common.

183
A new table
of weights
and
measures
established.

rannical than this was never made by an eastern despot; and when it was first published, foreigners were at a loss whether to regard it as a sublime effort of a powerful government, or as a wild project which could produce nothing but confusion. The effects of it, however, have been truly terrible. We have already mentioned some of them in the bloody contest which occurred upon the Rhine, and Europe was soon destined to bear witness to still more extraordinary events.

In the end of July, general Custine was brought to trial, and executed, in consequence of a variety of accusations of infidelity to his trust and disrespect to the convention. The queen was next brought to trial before the revolutionary tribunal, on the 15th of October. The charges against her were very various; but the chief tendency of them was to prove that she had always been hostile to the revolution, and had excited all the efforts that had been made by the court against it. On the 16th of October, this beautiful woman, whom fortune once placed so high, ended her days on a scaffold, after a mock trial, in which no regard was paid either to justice or decency. She behaved with much dignity and composure, and appeared deeply impressed with a sense of religion. The members of the convention who had been at the head of the Girondist party, and had either been detained in prison since the 31st of May, or seized in the departments to which they had retired, were afterwards brought to trial. On the 30th of October, 21 of them were executed, viz. Brissot, Vergniaud, Genfonné, Duprat, Lehardi, Ducos, Fonfrede, Boileau, Gardien, Duchatel, Sillery, Fauchet, Dufriche, Duperret, La Source, Carra, Beauvais, Mainville, Antiboul, Vigée, and Lacaze. Seventy-one were still detained in confinement. The duke of Orleans was afterwards condemned, on a charge of having aspired to the sovereignty from the beginning of the revolution. His execution gave satisfaction to all parties. His vote for the punishment of death upon the trial of the late king had done him little honour even in the opinion of the Mountain, and had rendered him odious to all the rest of mankind.

The executions of persons of all ranks, particularly of priests and nobles, became now so common, that it would be in vain to attempt to give any detail of them. Every person brought before the revolutionary tribunal was condemned as a matter of course. The Jacobins seemed insatiable in their thirst after blood, and the people at large appeared to regard their conduct with unaccountable indifference.

When the human mind is once roused, its activity extends to every object. At this time a new table of weights and measures was established by the convention, in which the decimal arithmetic alone is employed. The court of Spain had the liberality, notwithstanding the war, to suffer M. Mechain to proceed in his operations for measuring a degree of the meridian in that country. He carried on his series of triangles from Barcelona to Perpignan; and from this place the mensuration was continued to Paris. M. de Lambre, and his pupil M. le Francois, also measured a degree of latitude in the vicinity of the metropolis. In all, 12 degrees of the meridian were measured; of which the mean is 57027 toises, and by this the universal standard of measure is calculated. M. M. de Borde and Cassini determined the length of a pendulum that swings se-

conds, *in vacuo* and in a mean temperature at Paris, to be 3 feet and 8,06 lines. M. M. Lavoisier and Haüy found that a cubic foot of distilled water at the freezing point weighs *in vacuo* 70 pounds and 60 gros French weight. We shall insert a table of the measures and weights now established.

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Revolution,
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Long Measure.

Metres.	French Toises.
10,000,000 = a quadrant of the meridian which is the principle on which the new measure is founded	5132430
100,000 = an hundredth part of a quadrant, or decimal degree of the meridian	51324
1000 = a <i>milliare</i> , or mile	513
100 = a <i>stadium</i>	Agrarian measure, { 51.3243
10 = a <i>perch</i>	
	Feet. Inch. Lines.
1 = a <i>metre</i> , or rectilinear unit	3 0 11.44
$\frac{1}{10}$ or 0.1 = a <i>decimetre</i> , or palm	0 3 8.344
$\frac{1}{100}$ or 0.01 = a <i>centremetre</i> , or digit	0 0 4.434
$\frac{1}{1000}$ or 0.001 = a <i>millimetre</i>	0 0 .443

Superficial Measure.

Sq. Metres.	Sq. Feet.
10,000 = an <i>are</i> , or superficial unit, being a square the side of which is 100 metres in length	94831
1000 = a <i>deciare</i> , or tenth of an <i>are</i> ; a superficies an hundred metres long, and ten broad	9483.1
100 = a <i>centiare</i>	948.31

Measures of Capacity.

Cub. decimetres	Paris Pints.	Paris Bush.
1000 = the cubic <i>metre</i> , or cade or tun	1051 $\frac{1}{2}$	78.9
100 = <i>decicade</i> , or <i>setier</i>	105 $\frac{1}{2}$	7.89
10 = <i>centicade</i> , or bushel	10 $\frac{1}{2}$	.789
1 = cubic <i>decimetre</i> , or pint	1 $\frac{1}{5}$	.0789

Weights.

Cub. decimetres of water.	French Pounds.
1000 = the weight of a cubic <i>metre</i> , or cade of water, is called a <i>bar</i> or <i>millier</i>	2044.4
100 = $\frac{1}{10}$ of a <i>bar</i> , or <i>decibar</i> , or quintal	204.44
10 = $\frac{1}{100}$ of a <i>bar</i> , or <i>centibar</i> , or <i>decal</i>	20.444
	lb. oz. gros. grains.
1 = the weight of a cubic <i>decimetre</i> of water is called a <i>grave</i> , or pound	2 8 5 49
.1 = $\frac{1}{10}$ of a <i>grave</i> , or <i>decigrave</i> , or ounce	0 3 2 12.1
.01 = $\frac{1}{100}$ of a <i>grave</i> , or <i>centigrave</i> , or dram	0 0 2 44.41
.001 = the weight of a cubic <i>centimetre</i> of water, is named a <i>gravet</i> , or <i>maille</i>	0 0 0 18.841
.0001 = <i>decigravet</i> , or grain	0 0 0 1.8841
.00001 = <i>centigravet</i>	0 0 0 0.18841

^{French Revolution, 1793.} A piece of silver coin weighing a *centigrave*, and a *franc* of silver, according to the former standard will be worth 40 sols 10 $\frac{1}{2}$ deniers. The *milliare*, or thousand *metres*, is substituted for the mile; and the *are*, for the arpent in land-measure. The latter two are to each other as 49 to 25. The astronomical circles with which M. M. de Borda and Cassini made the observations, are divided according to this plan. The quadrant contains 100 degrees, and each degree 100 minutes. Hence the minute of a great circle on our globe is equal to a *milliare*, or new French mile. If, for the reduction of this measure, we estimate the Paris toise, according to the comparison made with the standard kept in the Royal Society of London, at 6.3925 English feet, the *milliare* or minute will be equal to 1093.633 yards, and the *metre* 3.280899 feet.

¹⁸⁴
A new calendar formed.

At the same period a new kalendar was formed.— By it the year is made to begin with the autumnal equinox, and is divided into 12 months. These are called Vindemaire, Brumaire, Frimaire, Nivos, Ventos, Pluvios, Germinal, Frorail, Praireal, Messidor, Fervidor, and Fructidor. The months consist of 30 days each, and are divided into three decades. The days of each decade are known by the names of Primidi, Duodi, Tridi, &c. to Decadi; and the day of rest is appointed for every tenth day, instead of the seventh. The day (which begins at midnight) is distributed into ten parts, and these are decimally divided and subdivided. Five supernumerary days are added every year after the 30th of Fructidor. To these is given the absurd appellation of *Sans Culottides*, a word borrowed from a term of reproach (*sans culotte*), which had often been bestowed on the republican party from the meanness of their rank and fortune; but which that party now attempted to render honourable and popular. The childish folly of this innovation has struck every person with surprize, as it can serve no good purpose whatever. It is a wonderful instance of the backwardness of the human mind, which can occupy itself one moment with deeds of savage barbarity, and the next with a matter so unimportant as the artificial division of time.

¹⁸⁵
Decay of religion.

The religion of France had been gradually losing its influence; and on the 7th of November, Gobet bishop of Paris, along with a great multitude of other ecclesiastics, came into the hall of the convention, and solemnly resigned their functions and renounced the Christian religion. All the clergymen, whether Protestant or Catholic, that were members of the convention, followed this example, excepting only Gregoire, whom we formerly mentioned as having been one of the first priests that joined the *Tiers Etat* after the meeting of the States General. He had the courage to profess himself a Christian, although he said that the emoluments of his bishopric were at the service of the republic. With the acclamations of the convention, it was decreed that the only French deities hereafter should be Liberty, Equality, Reason, &c. and they would seem to have consecrated these as a kind of new objects of worship.— What political purpose the leaders in the convention intended to serve by this proceeding does not clearly appear; unless, perhaps, their object was to render the French manners and modes of thinking so completely new, that it should never be in their power to return to the state from which they had just emerged, or to unite

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in intercourse with the other nations of Europe. The populace, however, could not at once relinquish entirely the religion of their fathers. The Commune of Paris ordered the churches to be shut up, but the Convention found it necessary to annul this order; and Robespierre gained no small degree of popularity by supporting the liberty of religious worship on this occasion. Hebert and Fabre d'Eglantine, who led the opposite party, hastened their own fall by this ill-judged contempt of popular opinion.

For, now that the republic saw itself successful in all quarters, when the Mountain party and the Jacobins had no rival at home, and accounted themselves in no immediate danger from abroad, they began to split into factions, and the fiercest jealousies arose. The Jacobin Club was the usual place in which their contests were carried on; and at this time Robespierre acted the part of a mediator between all parties. He attempted with great art to turn their attention from private animosities to public affairs. He spread a report that an invasion of Great Britain was speedily to take place. He therefore proposed that the Jacobin Club should set themselves to work to discover the vulnerable parts of the British constitution and government. They did so: They made speeches, and wrote essays without number. And in this way was the most fierce and turbulent band of men that ever perhaps existed in any country occupied and amused for a very considerable time. What is no less singular, a great number of British subjects favoured the plans of these reforming Atheists, and, under the specious appellation of the *Friends of the People*, acted in concert with the French Jacobins.

The winter passed away in tolerable quietness, and no military enterprise was undertaken either by the allies or by the French. On the 1st of February, Barrere asserted in the Convention that the confederate powers were willing *provisionally* to acknowledge the French republic, to consent to a cessation of hostilities for two years, at the end of which a lasting peace should be ratified by the French people. But this proposal the Convention declared itself determined to reject, as affording to the other nations of Europe the means of undermining their new government.

In the mean time, the revolutionary government was gradually becoming more vigorous. Thirty committees of the Convention managed the whole business of the state, without sharing much of the direct executive government, which rested in the committee of public safety. These different committees were engaged in the utmost variety of objects. The ruling party had no competitors for power. Without confusion or opposition, therefore, the most extensive plans were rapidly carried into effect. The Convention was little more than a court in which every project was solemnly registered. In the same session 30 decrees would sometimes be passed upon objects the most widely different. The finances were under one committee, at the head of which was Cambon.— This committee found resources for the most lavish expenditure. The assignats were received as money throughout the state; and thus a paper mill was said to have become more valuable than a mine of gold. Their credit was supported by an arbitrary law regulating the *maximum* or highest price of all provisions, and by the immense mass of wealth which had come into the hands of the Convention by seizing the church lands, and by confiscating the property of royalists, emigrants, and persons

^{French Revolution, 1794.}

¹⁸⁶
Quarrels between the Mountain and Jacobins.

¹⁸⁷
A provisional acknowledgment of the republic by the allies rejected by the convention.

¹⁸⁸
Vigorous state of the revolutionary government.

¹⁸⁹
Management of the finances and other resources of the nation.

French
Revolution,
1794.

persons condemned by the revolutionary tribunal. So unequally had property been divided under the ancient government, that by means of these confiscations about seven-tenths of the national territory was supposed to be in the hands of the public. To this was added the plunder of the churches, consisting of gold and silver saints, and utensils employed in divine worship, along with other articles of less value; among which may be mentioned the innumerable church bells, which were regarded as sufficient for the manufacture of 15,000 pieces of cannon. These resources formed a mass of property such as never was possessed by any government.

Other committees were engaged in very different objects. Highways were constructed, and canals planned and cut throughout the country. Immense manufactories of arms were everywhere established. At Paris alone 1100 muskets were daily fabricated, and 100 pieces of cannon cast every month. Public schools were assiduously instituted, and the French language taught in its purity from the Pyrenees to the Rhine. The French Convention possessed immense resources, and they did not hesitate to lavish them upon their schemes. Every science and every art was called upon for aid, and the most accomplished men in every profession were employed in giving splendour to their country. The chemists, in particular, gave essential aid by the facility with which they supplied materials for the manufacture of gun-powder; and in return for their services, Lavoisier, the greatest of them, suffered death by a most iniquitous sentence. Not fewer than 200 new dramatic performances were produced in less than two years; the object of which was to attach the people to the present order of things. The vigour with which the committees of subsistence exerted themselves is particularly to be remarked. As all Europe was at war with France, and as England, Holland, and Spain, the three maritime powers, were engaged in the contest, it had been thought not impossible to reduce France to great distress by famine, especially as it was imagined that the country had not resources to supply its immense population. But the present leaders of that country acted with the policy of a besieged garrison. They seized upon the whole provisions in the country, and carried them to public granaries. They registered the cattle, and made their owners responsible for them. — They provided the armies abundantly, and, as the people were accurately numbered, they dealt out in every district, on stated occasions, what was absolutely necessary for subsistence, and no more. To all this the people submitted; and indeed, throughout the whole of the mixed scenes of this revolution, the calm judgment of the historian is not a little perplexed. We cannot avoid admiring the patience with which the people at large endured every hardship that was represented as necessary to the common cause, and the enthusiastic energy with which they lavished their blood in defence of the independence of their country. At the same time, we must regard with indignation and disgust the worthless intrigues by means of which the sanguinary factions in the Convention and the capital alternately massacred each other.

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Diffensions
of the Ja-
cobins in-
crease.

During the winter the diffensions of the Jacobins still increased. They were divided into two clubs, of which the new one assembled at a hall which once belonged to the Cordeliers. The leaders of it were He-

bert, Ronfin, Vincent, and others; but the old society retained its ascendancy, and Robespierre was now decidedly its leader. This extraordinary man had gradually accumulated in his own person the confidence of the people and the direction of the government. As the committees were above the Convention, which was become little more than a silent court of record, so the committee of public safety was above the other committees. Robespierre was the leader of this ruling committee. Barrere, St Just, Couthon, and others of its members, only acted a secondary part. They laboured in the business of the state, but the radical power was with Robespierre. He surrounded the members of the Convention with spies. He was jealous and implacable, and set no bounds to the shedding of blood. On the 25th of March he brought to trial the following active Jacobins, who were condemned and executed on the following day: Hebert, Ronfin, Momoro, Vincent, Du Croquet, Kocq, Col. Laumur, M. M. Bourgeois, Mazuel, La Bourreau, Ancard, Le Clerc, Proly, Desfieux, Anacharsis Cloots, Pereira, Florent Armand, Descombes, and Debuison. Not satisfied with this, on the 2d of April he brought to trial nine of those who had once been his most vigorous associates, Danton, Fabre d'Eglantine, Bazire, Chabot, Philippeaux, Camille Desmoulins, Lacroix, Delaunay d'Angers, He-rault de Sechelles, who, along with Westerman, were executed on the evening of the 5th.

Still, however, the preparations for the ensuing campaign were proceeding with unabated vigour. The committee for military affairs, at the head of which were Carnot, La Fitte, d'Anissi, and others, was busy in arranging along the frontiers the immense force which the requisition had called forth. Plans of attack and defence were made out by this committee; and when approved by the committee of public safety they were sent to the generals to be executed. On the other side, the allies were making powerful preparations for another attempt to subjugate France. The Emperor himself took the field at the head of the armies in the Netherlands. The plan of the campaign is said to have been formed by the Austrian Colonel Mack. West Flanders was to be protected by a strong body of men; the main army was to penetrate to Landrecies, and getting within the line of French frontier towns, it was to cut them off from the interior by covering the country from Maubeuge to the sea. The plan was *bold*. It belongs to military men to judge whether this was not its only merit. When attempting to put it in execution, the allies must have been ill informed of the immense force which the French were collecting against them. Even the town of Lisse alone, which is capable of containing a numerous army within its walls, and which was to be left in their rear, should have seemed an insurmountable objection to the plan.

On the 16th of April the Austrian, British, and Dutch armies assembled on the heights above Cateau, and were reviewed by the emperor. On the following day they advanced in eight columns against the French, drove in their whole posts, and penetrated beyond Landrecies; which place the French attempted to relieve, but without success. The allied army now amounted to 187,000 men, who were disposed in the following manner; 15,000 Dutch and 15,000 Austrians, under the prince of Orange and general Latour, formed the siege

French
Revolution,
1794.

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Prepara-
tions for
the cam-
paign of
1794, and
plan of the
allies.

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State of
the allied
armies.

French Revolution 1794. Siege of Landrecies; 15,000 British and 15,000 Austrians, commanded by the duke of York and general Otto, encamped towards Cambray. The emperor and the prince of Saxe-Cobourg, at the head of 60,000 Austrians, were advanced as far as Guise; 12,000 Hessians and Austrians under general Worms were stationed near Douay and Bouchain; Count Kaunitz with 15,000 Austrians defended the Sambre and the quarter near Maubeuge; and, lastly, general Clairfait, with 40,000 Austrians and Hanoverians, protected Flanders from Tournay to the sea; 60,000 Prussians, for whom a subsidy had been paid by Great Britain, were expected in addition to these, but they never arrived.

1793
Fall of
Landrecies.

1794
Success of
Pichegru
in West
Flanders.

The French now commenced their active operations. On the morning of the 26th of April they attacked the duke of York near Cateau in great force. After a severe conflict they were repulsed, and their general Chapuy was taken prisoner. At the same time they attacked the troops under his Imperial majesty, but were there also repulsed in a similar manner; losing in all 57 pieces of cannon. On the same day, however, general Pichegru advanced from Lisle, attacked and defeated general Clairfait, took 32 pieces of cannon; and, in the course of a few days, made himself master of Warwick, Menin, and Courtray. On the 29th of April, the garrison of Landrecies surrendered to the allies. When this event was known in the convention, it excited a considerable degree of alarm. It was, however, the last effectual piece of success enjoyed by the allies during this disastrous campaign. General Clairfait was again completely defeated by Pichegru in a general engagement; and it was found necessary to send the duke of York to his assistance. This movement was no doubt unavoidable; but the effect of it was, that it split down the allied army into a variety of portions, capable of carrying on a desultory warfare, but unfit for the vigorous objects of conquest. On the 10th the duke of York was attacked near Tournay by a body of the enemy, whom he repulsed; but he was unable to join Clairfait, upon whose destruction the French were chiefly bent: for at the same time that the duke of York was occupied by the attack upon himself, Pichegru fell upon Clairfait with such irresistible impetuosity, that he was compelled to retreat in confusion, and a part of his army appears to have fled to the neighbourhood of Bruges. While Pichegru was thus advancing successfully in West Flanders, general Jourdan advanced in East Flanders from Maubeuge, crossed the Sambre, and forced general Kaunitz to retreat. On the 18th, however, general Kaunitz succeeded in repulsing the enemy in his turn, and they re-crossed the Sambre with considerable loss.

The allies now found that no progress could be made in France while general Pichegru was advancing successfully and occupying West Flanders in their rear. The emperor, therefore, withdrew the greater part of his army to the neighbourhood of Tournay, and resolved to make a grand effort to cut off the communication between Courtray and Lisle, thus to prevent completely the retreat of Pichegru. On the night of the 16th, the army moved forwards in five columns for this purpose. Clairfait was at the same time directed to cross the Lys, to effect a general junction, if possible, and complete the plan. The attempt during that evening seemed to promise success; but, in the course of next

day, the division under the duke of York was overpowered by numbers and defeated. The progress of the rest of the columns was stopped, and Clairfait completely defeated. In the confusion of the day, when attempting to rally the different parts of the division which he commanded, the duke of York was separated from his own troops by a party of the enemy's cavalry, and only escaped being made prisoner by the swiftness of his horse. The plan of the allies being thus frustrated, their army withdrew to the neighbourhood of Tournay.

Pichegru speedily attempted to retaliate against the allies. On the 22d of May he brought down at day break his whole force against them. The attack was commenced by a heavy fire of artillery, and all the advanced posts were forced. The engagement soon became general; the attacks were repeatedly renewed on both sides; the whole day was spent in a succession of obstinate battles. All that military skill could do was performed on both sides. The French and the allied soldiers fought with equal courage and equal discipline. At nine o'clock in the evening the French at last reluctantly withdrew from the attack. The day on which a vanquished enemy flies from the field is not always that on which the victory is won. In this engagement the French were unsuccessful in their immediate object; but the weight of their fire, their steady discipline, and their violent obstinacy of attack, raised their military character high in the estimation of the officers and soldiers of the allied army. It was soon perceived, that in addition to these they possessed other advantages. Their numbers were immense; they implicitly obeyed their generals; who, being men newly raised from the rank of subalterns, as implicitly submitted to the directions of the committee of public safety. A combination of efforts was thus produced whose operation was not retarded by divided counsels. On the other side, the numbers of the allies were daily declining; their leaders were independent princes or powerful men, whose sentiments and interests were often very hostile to each other, and their exertions were consequently disunited.

On the 24th the French again crossed the Sambre, but were driven back with much loss. On the 27th an attempt was made to besiege Charleroi, but the prince of Orange on the 3d of June compelled them to raise the siege. On the 12th a similar attempt was made, and they were again repulsed. In West Flanders, however, Pichegru was sufficiently strong to commence the siege of Ypres. He was soon attacked by general Clairfait for the purpose of relieving it, but without success.—Ypres was garrisoned by 7000 men; reinforcements were therefore daily sent from the grand army to Clairfait for the purpose of relieving it. It is unnecessary to mention the bloody contests in which that unfortunate general was daily engaged with the French; it is sufficient to say, that they were uniformly unsuccessful, and were the means of wasting, in a great degree, the armies of the allies. Ypres held out till the 17th of June, when it capitulated: and such was the discipline of the French army at this time, that no notice could be obtained, for several days, of that event. In consequence of it and of other events, the duke of York found it necessary to retreat to Oudenarde; for Jourdan, after storming the Austrian camp

French Revolution, 1794.

1795
He lays
siege to
Ypres, and

1796
Takes it

French
Revolution,
1794.
197
Charleroi
surrender-
ed, and the
Austrians
defeated.

of Betignies, now advanced with such strength upon Charleroi in the east that its immediate fall was feared. As this would have enabled the two French armies to encircle the whole of Flanders, the prince of Cobourg advanced to its relief. Charleroi surrendered at discretion on the 25th. This circumstance was not known by the prince of Cobourg when he advanced on the 26th to attack in their entrenchments the army that covered the siege near Fleurus: but the covering army being by this time reinforced by the accession of the besieging army, the allies were repulsed. Jourdan then drew his men out of their entrenchments; and, in his turn, attacked the Austrians. He was three times repulsed, but was at last successful: the loss of the vanquished army is said to have been prodigious; but no regular accounts of it have been published. The French unquestionably exaggerated their own success, when they said that it amounted to 15,000 men.

198
Further
successes of
the French
in Flanders,

The allies now retreated in all quarters. Nieuport, Ostend, and Bruges, were taken; and Tournay, Mons, Oudenarde, and Brussels, opened their gates. At this last place the French armies of East and West Flanders united. Landrecies, Valenciennes, Condé, and Quesnoy, were fruitlessly left with garrisons in them. The allied troops, evacuating Namur, formed a line from Antwerp to Liege to protect the country behind. The French advanced in full force, and attacked general Clairfait, cut to pieces half the troops that now remained under him, and broke the line. The allies retreated before them. The duke of York was joined by some troops under the earl of Moira that with much difficulty had made their way to him from Ostend; and with these and the Dutch troops he retired to the neighbourhood of Bergen-op-zoom and Breda for the protection of Holland. The prince of Cobourg evacuated Liege, crossed the Mæse, and placed a garrison in Maestricht. He soon, however, sent back a part of his troops to the neighbourhood of Tongres; for here, to the astonishment of all Europe, the French armies made a voluntary pause in their career of victory, and ceased to pursue their retiring foes. Sluys in Dutch Flanders was the only foreign post that they continued to attack, and it surrendered after a siege of 21 days.

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And on the
Rhine.

On the Rhine the war was equally successful on the part of the French. On the 12th, 13th, and 14th of July, repeated engagements were fought; in which the French enjoyed their usual success. They had numerous armies in every quarter. Their mode of fighting was to make full preparation for accomplishing their object, and to fight in great bodies day after day till it was obtained. The Palatinate was thus over-run, and Treves taken, by general Michaud. Flanders and the Palatinate have always been accounted the granaries of Germany; and both of them, at the commencement of the harvest, now fell into the hands of the French.

200
Corsica
subdued by
Great Bri-
tain.

During the course of this summer Corsica was subdued by Great Britain; and the whole of the French West India Islands, excepting a part of Guadalupe, yielded to the British troops under the command of Sir Charles Grey and Sir John Jarvis. On the first of June the British fleet, under the command of earl Howe, gained a most splendid victory over the French fleet to the westward of Ushant. The French committee of safety were known to have purchased in America im-

mense quantities of grain and other stores. These were embarked on board 160 sail of merchantmen, convoyed by six sail of the line. Lord Howe failed to intercept this valuable convoy. The French fleet sailed at the same time to protect it. On the morning of the 28th of May the fleets came in sight of each other. The British admiral had previously dispatched six ships of the line under admiral Montague to intercept the French convoy, while he should engage and detain the grand fleet. The French dispatched eight sail to defeat this attempt. In the course of the 29th Lord Howe got to windward of the French fleet. His force was 25, and theirs was 26, sail of the line. The following day he bore down upon them, and broke their line. The engagement was one of the severest ever fought. The French admiral, in less than an hour after the close action commenced in the centre, crowded off with 12 of his ships. The British fleet was so much disabled, or separated, that several of the French dismantled ships got away under sails raised on the stump of their fore-masts. Seven sail of the line, however, remained in possession of the British, and two were unquestionably sunk. In the mean time, admiral Montague fell in with the French convoy, but it was now guarded by 14 sail of the line. As he could not encounter such a force, he returned home, and it was safely conveyed into port. Thus, by one of those contradictions which so often occur in human affairs, the British fleet was victorious, and the French were left in some measure masters of the sea. As this engagement however testified that the British seamen had not lost their ancient superiority on their own element, the nation regarded the present victory as a pledge of its independence, and very general rejoicings took place in consequence of it.

In the mean time, the revolutionary system of government in the hands of committees of the convention at Paris, and of committees of the popular societies throughout the country, was arrived at its highest perfection, and proceeded without opposition in its severe and sanguinary measures.

On the 10th of May Madame Elizabeth, sister of the late king, was sacrificed by it in consequence of a decree of the revolutionary tribunal. Multitudes of others of every rank and sex were daily sacrificed in a similar manner; the rich in particular were the great objects of persecution, because the confiscation of their property added to the strength of the ruling powers. But neither were the poor safe from the bloody vigilance of this new and singular government. By the different executions Robespierre had contrived to destroy every avowed rival. All the constituted authorities consisted wholly of persons nominated with his approbation; and as the committees which conducted the business of the state were at his disposal, his will was irresistible throughout the republic. He met with no opposition in the convention; for that body was no longer the turbulent popular assembly which it had once appeared; it was little more than a name employed to give some sort of respectability to such schemes as were proposed to it.

Amidst this accumulation, however, of seemingly irresistible authority, Robespierre was at the brink of ruin. The whole of the old Girondist party was indeed subdued and silent; but many members of the convention still remained attached to it. The party of the Mountain,

French
Revolution,
1794.
201
Splendid
victory of
the British
fleet un-
der Lord
Howe.

202
The horrid
executions
in Paris
continued.

203
Immense
power of
Robe-
spierre

204
Verging to
ruin.

French
Revolution,
1794.

French
Revolution,
1794.

Mountain, by means of whom Robespierre had risen to power, with little satisfaction now found themselves not only disregarded, but ready at every instant to fall a sacrifice to that system of terror which they had contributed to erect. Even the Jacobins themselves, though neither timid nor cautious in the shedding of blood, began to murmur when they saw that awful privilege confined exclusively within a few hands, or rather monopolized by an individual. In this state things remained for some time; and it appeared how possible it is for an individual to govern a great nation even while the whole of that nation is hostile to his power. The banishment or imprisonment of all foreigners, which had long been rigorously practised, prevents us from possessing much accurate information concerning the internal state of France at this period; but it is certain, that one circumstance in particular tended much to accelerate the fall of Robespierre. He had procured a decree to be passed, authorising the committee of public safety to imprison at its pleasure, and bring to trial, any member of the convention. All the individuals of that body found themselves placed by this decree in the hands of a man whose severe and suspicious temper they well knew. Still, however, they were so much surrounded by spies, that it was difficult to form a party or plan of operations; even the majority of the committee of public safety were among the number of the discontented, but they dared not to withstand their chief. At last, on the 25th of July, the convention began to exhibit signs of agitation. It was understood, that in the course of a few days Robespierre would sacrifice a number of the members to his suspicions. On the following day the sitting of the convention was still more tempestuous. In a long speech Robespierre defended his own conduct against those who had reproached him with aspiring to the dictatorship of France. He attacked the party whom he styled *Moderates*, as wishing to overturn the revolutionary government, and to restore the feeble system of the Brissotines. The result of a long debate was, that Robespierre was apparently victorious, and his speech was ordered to be printed. On the 27th the convention appeared ripe for a change: St Just, a member of the committee of public safety, in attempting to defend Robespierre, was repeatedly interrupted; and Billaud Varrennes stood forward and enumerated the crimes, and proclaimed the tyranny, of Robespierre. The speech was received with bursts of applause. Robespierre in vain attempted to defend himself; he was silenced by shouts of execration from every part of the hall. Tallien seconded the former speaker in his accusation. The sitting was declared permanent, and a decree of arrest was passed against Robespierre and a younger brother of his, along with St Just, Couthon, and Lebas. These men left the convention, and found security in the hall of the commune of Paris; where the municipal officers agreed to protect and stand by them. The tocsin was sounded; the armed force was under their command; an insurrection was therefore attempted against the convention: but the sections of Paris refused their support. Very few of the troops could be collected, and these were not firm; the late tyranny had become odious. The hall of the commune was therefore speedily surrounded; and about three o'clock in the morning of the 28th Robespierre and his associates were made prisoners. They had been outlawed

by the convention on account of their resistance. They were not therefore tried, unless for the purpose of identifying their persons; and, in the course of that day, they were executed: 60 of the municipal officers were also executed for joining in their rebellion; and in this way a storm passed over, which at one time threatened to involve the French capital in ruin, and filled all Europe with astonishment. Thus also terminated the career of the most extraordinary man that the French revolution had brought forward. His talents were undoubtedly considerable, and his ambition knew no bounds, bidding defiance to the ordinary feelings of humanity. Had Dumourier possessed his coolness and caution, or had he possessed the military talents of Dumourier, the convention would certainly have been overturned, and we should have seen a second Cromwell on the throne of his murdered sovereign.

After the fall of Robespierre, the convention exhibited no small change of appearance. Instead of that silence which formerly prevailed, all was bustle and noise; all accused each other. There was no longer any leader, and there was no formed party. The former system of terror was declared to be at an end, and a new system of *moderation* succeeded. This was carried to as great a height as the system of terror had formerly been; and all means were taken to render popular the fall of their late tyrant. The committees were organised anew, and their members ordered to be frequently changed. The correspondence between the affiliated Jacobin clubs was prohibited, and at last the Jacobin club itself was abolished. This last event was accomplished with ease; and that society which had been the great engine of the revolution, was itself without resistance overturned. Seventy-one deputies of the Girondist party, who had been imprisoned since the 31st of May 1793, were set at liberty. The name of Lyons was restored to it. Some of the agents of Robespierre were punished, particularly the infamous Carrier, whose cruelties in La Vendée we formerly mentioned. Still, however, the convention appeared so little united and so little decided with regard to objects of the first importance, that in all probability they would not have conducted the important struggle against the nations of Europe with more success than the Girondist party had formerly done, if the revolutionary government and the late system of terror had not already accumulated in their hands such vast resources, and traced out such a plan of procedure, as rendered it an easy matter to preserve their numerous armies in the train of success to which they were now habituated.

The allies in their retreat had left strong garrisons in the French towns which had surrendered to them. These were Condé, Valenciennes, Quesnoy, and Landrecies. They now surrendered to the republican armies with so little resistance, that the conduct of the emperor began to be considered as ambiguous, and he was suspected of having entered into some kind of compromise with the French. This idea proved erroneous; and as soon as the army which had besieged these towns was able to join the grand army under Pichegru and Jourdan, the operations of the campaign were resumed after a suspension of almost two months. The French army divided itself into two bodies. One of these under Jourdan advanced against General Clairfait, who had succeeded the prince of Cobourg in the command

French Revolution, 1794. 208 Further successes of the French, in the neighbourhood of Maestricht. On the 13th of September the French attacked the whole Austrian posts in an extent of five leagues from Liege to Maestricht. On that and the following day the losses were nearly equal. On the 17th the French with 50 pieces of cannon attacked General Kray in his entrenched camp before Maestricht. M. de Kray was already retiring when General Clairfait arrived with a strong reinforcement, and after a severe combat the French were once more compelled to retire. On the 18th the French renewed the attack with tenfold fury upon every part of the Austrian line, and the whole was compelled to fly to the neighbourhood of Aix-la-Chapelle. General Clairfait now chose a strong position on the banks of the Roer, where he even declared it to be his wish that he might be attacked. But by this time the spirit of his army was humbled, desertions became numerous, and the want of discipline was extreme. On the 1st of October the French crossed the Maese and the Roer, and attacked the whole Austrian posts from Ruremond down to Juliers. After a bloody engagement, the brave and active, though unfortunate, General Clairfait was compelled hastily to cross the Rhine, with the loss of 10 or 12,000 men. The French general did not attempt to cross that river, but one detachment of his army took possession of Coblenz, while others laid close siege to Venlo and Maestricht, which soon surrendered.

109 And their progress in the conquest of Holland.

The division of the French army, in the mean time, under General Pichegru came down upon Holland, and attacked the allied army under the duke of York between Bois-le-duc and Grave. They forced the advanced post of Boxtel. Lieutenant-general Abercromby was sent to attempt to recover this post on the 15th of September, but he found the French in such force that he was obliged to retreat. Indeed the French were discovered to be no less than 80,000 strong in that neighbourhood. The duke of York was unable to contend against a force so superior, and retired across the Maese with the loss of somewhat less than 1500 men. Pichegru immediately laid siege to Bois-le-duc. On the 30th of September, Crevecoeur was taken, and Bois-le-duc surrendered in 10 days thereafter. In it 408 French emigrants were taken prisoners; and these, as well as 700 that had been taken at Nieuport, 500 at Sluys, and 1100 at Valenciennes, were all put to death, agreeably to the rigorous law formerly made by the convention. The French now followed the duke of York across the Maese. Upon this the greater part of the allied army under his royal highness crossed the Rhine and took post at Arnheim. The remaining part of the army followed soon after, and Nimeguen was occupied by the French on the 7th of November. The duke of Brunswick was at this time requested to take the command of the allied army, to protect Holland, if possible. He came to Arnheim for that purpose; but after examining the state of things there, he declined the undertaking. The allied troops had now so often fled before their victorious and almost innumerable enemies, they had so often been in want of every necessary, and had been received so ill by the inhabitants of the countries through which they passed, among whom the French cause was extremely popular, that they had lost that regularity of conduct and discipline which alone can afford a secure prospect of success in military affairs.

The French, on the contrary, well received, abounding in every thing, and proud of fighting in a popular cause, now acted with much order, and submitted to the strictest discipline. In addition to all these advantages, the French leaders had the dexterity to persuade the world that new and unknown arts were employed to give aid to their cause. At this period the *telegraphe* was first used for conveying intelligence from the frontiers to the capital, and from the capital to the frontiers. (See *TELEGRAPHE*). Balloons were also used by the French during this campaign to procure knowledge of the position of the enemy. An engineer ascended with the balloon, which was suffered to rise to a great height, but prevented from flying away by a long cord. He made plans of the enemies encampment; and during an attack he sent down notice of every hostile movement. In the affairs of men, and more especially in military transactions, opinion is of more importance than reality. The French soldiers confided in their own officers as men possessed of a kind of omniscience, while the allied troops, no doubt, beheld with anxiety a new contrivance employed against them, whose importance would be readily magnified by credulity and ignorance. With all these advantages, however, after the capture of Nimeguen, they once more made a halt in their career, and abstained from the attack of Holland, which now seemed almost prostrate before them.

While these events occurred in the north, the French arms were scarcely less successful on the side of Spain. Bellegarde was taken; in the Western Pyrenees, Fontarabia surrendered, and also St Sebastian; the whole kingdom of Spain seemed panic struck. That feeble government, with an almost impregnable frontier, and the most powerful fortresses, could make little resistance; and the difficult nature of their country was their only protection. The history of this war is only a history of victories on the part of the French. In the Eastern Pyrenees, on the 17th of November, the French general Dugommier was killed in an engagement, in which his army was successful. On the 20th of that month the French again attacked the Spaniards, and routed them by means of the bayonet, without firing a single musket-shot. Tents, baggage, and cannon, for an army of 50,000 men, fell into the hand of the conquerors, along with a great part of the province of Navarre. Towards the end of the year, an army of 40,000 Spaniards, entrenched behind 80 redoubts, the labour of six months, suffered themselves to be completely routed; their general count de La Union was found dead on the field of battle, and the whole Spanish artillery was taken. In three days thereafter, the fort Fernando de Figueres, containing a garrison of 9107 men, surrendered, although it mounted 171 pieces of cannon, and possessed abundance of provisions. The French continued their conquests; Rosas was taken, and the whole province of Catalonia was left at the mercy of the invaders.

The successes of this wonderful campaign were not yet terminated; and the last part of them is perhaps the most important, although no great effort was necessary to its execution. The winter now set in with uncommon severity. For some years past the seasons of Europe had been uncommonly mild; there had been little frost in winter, and no intense heat in summer. But during the late season the weather had long been remarkably

French Revolution, 1794. 210 Conduct, discipline, and state of the French army.

211 Their successes in Spain.

212 The conquest of Holland completed.

French Revolution, 1795. remarkably dry till the latter part of harvest, when there fell a considerable, though by no means unusual, quantity of rain. Towards the end of December a severe frost bound up the whole of the rivers and lakes of Holland. The Waal was frozen over in the beginning of January; a circumstance which had not occurred for 14 years past. Taking advantage of this, the French crossed that river, and with little opposition seized the important pass of Bommell, which at other seasons is so strong by its inundations. The allied army had been joined by 17,000 Austrians, and had received orders to defend Holland to the last. They did so, and were successful in repulsing the French for some days between the Waal and the Leck; but the republican army, amounting to 70,000 men, having at last advanced in full force, the allied troops were compelled to retire across the Yssel into Westphalia. In the course of their march through this desert country, in the midst of severe frost and a deep snow, they are said to have suffered incredible hardships, and to have lost a very great number of men. The French, in the mean time, advanced rapidly across the country to the Zuyder sea, to prevent the inhabitants from flying, and carrying off their property. On the 16th of January 1795, a party of horse, without resistance, took possession of Amsterdam. The other towns surrendered at discretion. In consequence of an order from the States General, the strong fortresses of Bergen-op-zoon, Williamstadt, Breda, &c. opened their gates to the French. The fleet and the shipping were fixed by the intense frost in their stations, and fell a prey to the enemy; who thus, with little effort, made a complete conquest of this populous and once powerful country. The French were well received by the people at large. The power of the Stadtholder had been supported among them merely by the influence of Prussia and England. Through hatred to this office, which had now become odious chiefly to the mercantile aristocracy of Holland, they were little attached to their allies, and gave them, during the present war, as little support as possible. The Stadtholder and his family now fled to England. The French declared, that they did not mean to make subjects but allies of the Dutch, and invited them to call together popular assemblies for settling their own government, under the protection of the French republic.

Thus terminated a campaign, the most astonishing, perhaps, that has been known in the history of mankind. In the course of it, even before the conquest of Holland, the French had taken 2000 pieces of cannon and 60,000 prisoners. After that event, the conquered territories added to them a population of nearly 14 millions of people. Luxembourg and Mentz were the only places on this side of the Rhine that resisted them. The former was closely blockaded, for the purpose of compelling it to surrender; the latter was several times assaulted, but successfully held out.

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The diet of Ratisbon with for peace. Europe was now weary of this bloody strife. The German Diet of Ratisbon declared its resolution to take measures for procuring peace. The Grand Duke of Tuscany concluded a treaty with the French republic. France itself, exhausted by massacres, emigrations, and the terrible efforts which it had made, wished for tranquillity; and the Convention found it necessary to declare that they were willing to treat for peace with any of the powers of Europe, upon honourable terms.

The frequent changes, however, which have with astonishing rapidity taken place in the mode of conducting French affairs, and the different principles displayed by the different factions as they successively got into power, have produced in Great Britain and Austria a very general persuasion that no peace concluded with the present Convention could either be honourable or permanent; and therefore these two mighty nations have resolved to continue the war with redoubled vigour. In support of the wisdom of this resolution, it has been observed, that the hatred of the Mountain to the Girondists was such, that it would have violated any treaty which had been concluded with them; that when Robespierre became all powerful, and terror was the order of the day, all former measures were changed, and peace or war made wholly subservient to the ambitious views of that relentless tyrant; that Tallien, having originally belonged to the Mountain, introduced the present system of moderation, not from principle, but only to reconcile the people to his usurped authority, and the fall of his bloody predecessor; that he may suddenly change his measures, or be denounced and executed by the influence of some more daring demagogue, who would again introduce the system of terror; and that in such a state of uncertainty, the only consequence to be expected from making peace at present is, that it would furnish the next faction which may gain the ascendancy in France with an opportunity of attacking the allies when less prepared to receive them. Such reasoning as this has been admitted in the British parliament, where a loan of six millions Sterling has been voted to the Emperor, to enable him to begin the ensuing campaign with an army of 200,000 men. In what manner the war ought to be conducted, it is not for us to say. The British nation seems to rest its hopes on its superiority at sea; and the greatest exertions are making to augment and man the navy. But we are here under the necessity of dropping this subject, without being able completely to fulfil the promise which we made to our readers at the end of the article **FRANCE**. There is as little appearance at present of peace, and a steady government being soon restored to that distracted country, as there was at the beginning of the troubles; and there is not the smallest probability that the republican constitution, framed by the Convention, will last one year after the dissolution of that assembly.

In tracing the origin and progress of this wonderful revolution, we have consulted every work from which we had reason to look for information, and we have confined ourselves to a simple narration of facts, seldom giving way to the reflections which they suggested. Our facts, too, have been generally stated from writers who are supposed to be not unfriendly to democracy, that they may gain the fuller credit with our own reformers; for in the most favourable point of view in which those facts can be placed, they furnish the strongest objection possible to all their proposed reformatory of the British constitution. If the horrible deeds of darkness which have been acted on the theatre of France cannot make us contented with the government under which we live, and which has been brought to its present state of perfection, not by the metaphysical speculations of recluse philosophers, but by observation and the practical experience of ages, we shall be considered by posterity as a

French Revolution, 1795.

214
Britain and Austria determine on a vigorous prosecution of the war.

215
Conclusion.

Revulsion
||
Reynolds.

people incapable of instruction, and ripe for the greatest miseries in which we may be involved.

REVULSION, in medicine, turning a flux of humours from one part to another by bleeding, cupping, friction, sinapisms, blisters, fomentations, bathings, issues, setons, strong purging of the bowels, &c.

REYN (Jan de), an eminent history and portrait painter, born at Dunkirk in 1610. He had the good fortune to be a disciple of Vandyke, was the first performer in his school, and was so attached to his master that he followed him to London, where it is thought he continued as long as he lived. In these kingdoms he is mostly known by the name of *Lang Jan*. He died in 1678: and it is imagined that the scarcity of his works is occasioned by so many of them being imputed to Vandyke; a circumstance which, if true, is beyond any thing that could be said in his praise.

REYNOLDS (Sir Joshua), the celebrated painter, was, on July the 16th 1723, born at Plympton, a small town in Devonshire. His father was minister of the parish, and also master of the grammar school; and being a man of learning and philanthropy, he was beloved and respected by all to whom he was known.—Such a man, it will naturally be supposed, was assiduous in the cultivation of the minds of his children, among whom his son Joshua shone conspicuous, by displaying at a very early period a superiority of genius, and the rudiments of a correct taste. Unlike other boys, who generally content themselves with giving a literal explanation of their author, regardless of his beauties or his faults, young Reynolds attended to both these, displaying a happy knowledge of what he read, and entering with ardour into the spirit of his author. He discovered likewise talents for composition, and a natural propensity to drawing, in which his friends and intimates thought him qualified to excel. Emulation was a distinguishing feature in his mind, which his father perceived with the delight natural to a parent; and designing him for the church, in which he hoped that his talents might raise him to eminence, he sent him to one of the universities.

Soon after this period he grew passionately fond of painting; and, by the perusal of Richardson's theory of that art, was determined to make it his profession through life. At his own earnest request, therefore, he was removed to London; and about the year 1742 became a pupil to Mr Hudson, who, though not himself an eminent painter was preceptor to several who afterwards excelled in the art. One of the first advices which he gave to Mr Reynolds was to copy carefully Guercino's drawings. This was done with such skill,

that many of the copies are said to be now preserved in the cabinets of the curious/as the originals of that very great master. Reynolds.

About the year 1749, Mr Reynolds went to Italy under the auspices, and in the company, of the late Lord (then Commodore) Keppel, who was appointed to the command of the British squadron in the Mediterranean. In this garden of the world, this magic seat of the arts, he failed not to visit the schools of the great masters, to study the productions of different ages, and to contemplate with unwearied attention the various beauties which are characteristic of each. His labour here, as has been observed of another painter, was "the labour of love, not the task of the hireling;" and how much he profited by it is known to all Europe.

Having remained about two years in Italy, and studied the language as well as the arts of the country with great success, he returned to England, improved by travel and refined by education. On the road to London from the port where he landed, he accidentally found in the inn where he lodged Johnson's life of Savage; and was so taken with the charms of composition, and the masterly delineation of character displayed in that performance, that, having begun to read it while leaning with his arm on the chimney-piece, he continued in that attitude insensible of pain till he was hardly able to raise his hand to his head. The admiration of the work naturally led him to seek the acquaintance of its author, who continued one of his sincerest admirers and warmest friends, till 1784, when they were separated by the stroke of death.

The first thing that distinguished him after his return to his native country, was a full length portrait of Commodore Keppel; which in the polite circles was spoken of in terms of the highest encomium, and testified to what a degree of eminence he had arrived in his profession. This was followed by a portrait of Lord Edgecombe, and a few others, which at once introduced him to the first business in portrait painting; and that branch of the art he cultivated with such success as will for ever establish his fame with all descriptions of refined society. Having painted some of the first-rate beauties of the age, the polite world flocked to see the graces and the charms of his pencil; and he soon became the most fashionable painter, not only in England, but in all Europe. He has indeed preserved the resemblance of so many illustrious characters, that we feel the less regret for his having left behind him so few historical paintings; though what he has done in that way shows (A) him to have been qualified to excel in both departments. The only landscape, perhaps, which he

(A) As the lovers of painting may wish to have a catalogue of this great master's historical pieces, we subjoin the following from the European Magazine, which we have good reason to believe accurate, as the editors of that miscellany grudge neither trouble nor expence to procure authentic information. Sir Joshua's principal historical pieces, then, are the following: Hope nursing Love; Venus chastising Cupid for having learned to cast accounts; Count Ugolino in the dungeon; the calling of Samuel; Ariadne; a Captain of banditti; Beggar Boy; a Lady in the character of St Agnes; Thais; Dionysius the Areopagite; an infant Jupiter; Master Crewe in the character of Henry VIII; the death of Dido; a Child asleep; Cupid sleeping; Covent Garden Cupid; Cupid in the Clouds; Cupids painting; Boy laughing; Master Herbert in the character of Bacchus; Hebe; Miss Meyer in the character of Hebe; Madona, a head; the Black-guard Mercury; a little boy (Samuel) praying; and old Man reading; Love losing the zone of Beauty; the Children in the Wood; Cleopatra

Reynolds. he ever painted, except those beautiful and chaste ones which compose the back grounds of many of his portraits, is "A View on the Thames from Richmond," which in 1784 was exhibited by the Society for Promoting Painting and Design in Liverpool.

In 1764 Mr Reynolds had the merit of being the first promoter of that club, which, having long existed without a name, became at last distinguished by the appellation of the *Literary Club*. Upon the foundation of the Royal Academy of Painting, Sculpture, and Architecture, he was appointed president; and his acknowledged excellence in his profession made the appointment acceptable to all the lovers of art. To add to the dignity of this new institution, his majesty conferred on the president the honour of knighthood; and Sir Joshua delivered his first discourse at the opening of the Academy on January 2. 1769. The merit of that discourse has been universally admitted among painters; but it contains some directions respecting the proper mode of prosecuting their studies, to which every student of every art would do well to pay attention. "I would chiefly recommend (says he), that an implicit obedience to the *rules of art*, as established by the practice of the great masters, should be exacted from the young students. That those models, which have passed through the approbation of ages, should be considered by them as perfect and infallible guides; as subjects for their imitation, not their criticism. I am confident, that this is the only efficacious method of making a progress in the arts; and that he who sets out with doubting, will find life finished before he becomes master of the rudiments. For it may be laid down as a maxim, that he who begins by presuming on his own sense, has ended his studies as soon as he has commenced them. Every opportunity, therefore, should be taken to discountenance that false and vulgar opinion, that rules are the fetters of genius. They are fetters only to men of no genius; as that armour which, upon the strong, becomes an ornament and a defence, upon the weak and misshapen turns into a load, and cripples the body which it was made to protect."

Each succeeding year, on the distribution of the prizes, Sir Joshua delivered to the students a discourse of equal merit with this: and perhaps we do not hazard too much when we say, that, from the whole collected, the lover of belles lettres and the fine arts will acquire juster notions of what is meant by taste in general, and better rules for acquiring a correct taste, than from multitudes of those volumes which have been professedly written on the subject.

In the autumn of 1785 he went to Brussels, where

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he expended about L. 1000 on the purchase of paintings, which, having been taken from the different monasteries and religious houses in Flanders and Germany, were then exposed to sale by the command of the Emperor Joseph! Gainsborough and he had engaged to paint each other's portrait; and the canvas for both being actually stretched, Sir Joshua gave one sitting to his distinguished rival; but, to the regret of every admirer of the art, the unexpected death of the latter prevented all further progress.

In 1790 he was anxiously desirous to procure the vacant professorship of perspective in the academy for Mr Bonomi, an Italian architect; but that artist not having been yet elected, an associate was of course no academician, and it became necessary to raise him to those situations, in order to qualify him for being a professor. Mr Gilpin being his competitor for the associateship, the numbers on the ballot proved equal, when the president by his casting vote decided the election in favour of his friend, who was thereby advanced so far towards the professorship. Soon after this, an academic seat being vacant, Sir Joshua exerted all his influence to obtain it for Mr Bonomi; but finding himself outvoted by a majority of two to one, he quitted the chair with great dissatisfaction, and next day sent to the secretary of the academy a formal resignation of the office, which for twenty-one years he had filled with honour to himself and his country. His indignation, however, subsiding, he suffered himself to be prevailed upon to return to the chair, which within a year and a half he was again desirous to quit for a better reason.

Finding a disease of languor, occasioned by an enlargement of the liver, to which he had for some time been subject, increase upon him, and daily expecting the total loss of sight, he wrote a letter to the academy, intimating his intention to resign the office of president on account of bodily infirmities, which disabled him from executing the duties of it to his own satisfaction. The academicians received this intelligence with the respectful concern due to the talents and virtues of their president; and either then did enter, or designed to enter, into a resolution, honourable to all parties, namely, that a deputation from the whole body of the academy should wait upon him, and inform him of their wish, that the authority and privileges of the office of president might be his during his life; declaring their willingness to permit the performance of any of its duties which might be irksome to him by a deputy.

From this period Sir Joshua never painted more. The last effort of his pencil was the portrait of the Honourable Charles James Fox, which was executed in his

C c

best

patra dissolving the Pearl; Garrick in the character of Kiteley; Garrick between Tragedy and Comedy; Mrs Abingdon in the character of Comedy; a Child surrounded by Guardian Angels; Miss Beauclerc in the character of Spenser's Una; Resignation; the Duchess of Manchester in the character of Diana; Lady Blake in the character of Juno; Mrs Sheridan in the character of St Cecilia; Edwin, from Beattie's Minstrel; the Nativity, Four Cardinal Virtues, and Faith, Hope, and Charity, for the window of New College Chapel, Oxford; the Studious Boy; a Bacchante; a daughter of Lord W. Gordon as an Angel; the Holy Family; the Cottagers, from Thomson; the Vestal; the Careful Shepherdess; a Gypsy telling Fortunes; the infant Hercules strangling the Serpent; the Mouse-trap girl; Venus; Cornelia and her Children; the Bird; Melancholy; Mrs Siddons in Tragedy; Head of Lear; Mrs Talmash in the character of Miranda, with Prospero and Caliban; Robin Goodfellow; Death of Cardinal Beaufort; Macbeth, with the Caldron of the Witches.

Reynolds. best style, and shows that his fancy, his imagination, and his other great powers in the art which he professed, remained unabated to the end of his life. When the last touches were given to this picture,

“The hand of Reynolds fell, to rise no more.”

On Thursday February the 23d 1792, the world was deprived of this amiable man and excellent artist at the age of 68 years; a man than whom no one, according to Johnson, had passed through life with more observation of men and manners. The following character of him is said to be the production of Mr Burke:

“His illness was long, but borne with a mild and cheerful fortitude, without the least mixture of any thing irritable or querulous, agreeably to the placid and even tenor of his whole life. He had from the beginning of his malady a distinct view of his dissolution, which he contemplated with that entire composure which nothing but the innocence, integrity, and usefulness of his life, and an unaffected submission to the will of Providence, could bestow. In this situation he had every consolation from family tenderness, which his tenderness to his family had always merited.

“Sir Joshua Reynolds was, on very many accounts, one of the most memorable men of his time: He was the first Englishman who added the praise of the elegant arts to the other glories of his country. In taste, in grace, in facility, in happy invention, and in the richness and harmony of colouring, he was equal to the great masters of the renowned ages. In portrait he went beyond them; for he communicated to that description of the art in which English artists are the most engaged, a variety, a fancy, and a dignity, derived from the higher branches, which even those who professed them in a superior manner did not always preserve when they delineated individual nature. His portraits remind the spectator of the invention of history and the amenity of landscape. In painting portraits, he appears not to be raised upon that platform, but to descend to it from a higher sphere. His paintings illustrate his lessons, and his lessons seem to be derived from his paintings.

“He possessed the theory as perfectly as the practice of his art. To be such a painter, he was a profound and penetrating philosopher.

“In full happiness of foreign and domestic fame, admired by the expert in art, and by the learned in science, courted by the great, caressed by sovereign powers, and celebrated by distinguished poets, his native humility, modesty, and candour, never forsook him, even on surprise or provocation; nor was the least degree of arrogance or assumption visible to the most scrutinizing eye in any part of his conduct or discourse.

“His talents of every kind—powerful from nature, and not meanly cultivated in letters—his social virtues in all the relations and all the habitudes of life, rendered him the centre of a very great and unparalleled variety

of agreeable societies, which will be dissipated by his death. He had too much merit not to excite some jealousy, too much innocence to provoke any enmity. The loss of no man of his time can be felt with more sincere, general, and unmixed sorrow.”

REZAN, or **REZANSKOI**, an ancient town of Russia, and capital of a duchy of the same name, with an archbishop's see. It was formerly considerable for its extent and riches; but it was almost ruined by the Tartars in 1568. The country is populous, and was formerly governed by its own princes. E. Long. 42. 37. N. Lat. 54. 54.

RHADAMANTHUS, a severe judge, and king of Lydia; the poets make him one of the three judges of hell.

RHAGADES, in medicine, denotes chaps or clefts in any part of the body. If seated in the anus, and recent, the patient must sit still, and sit over the steam of warm water. The epulotic cerate may also be applied. If the lips of these fissures are callous, they must be cut or otherwise treated as to become new ulcerations.

RHAMA, or **RAMA**, an incarnate deity of the first rank, in Indian mythology. Sir William Jones believes he was the Dionysos (A) of the Greeks, whom they named *Bromius*, without knowing why; and *Bugenes*, when they represented him *horned*, as well as *Lyaos* and *Eleutherios* the deliverer, and *Triambos* or *Dythyrambos* the triumphant.

“Most of those titles (says Sir William) were adopted by the Romans, by whom he was called *Bruma*, *Tauriformis*, *Liber*, and *Triumphus*; and both nations had records or traditionary accounts of his giving laws to men and deciding their contests, of his improving navigation and commerce, and, what may appear yet more observable, of his conquering India and other countries with an army of satyrs, commanded by no less a personage than Pan; whom Lillius Giralduus, on what authority I know not, asserts to have resided in Iberia ‘when he had returned, says the learned mythologist, from the Indian war, in which he accompanied Bacchus.’ It were superfluous in a mere essay to run any length in the parallel between this European god and the sovereign of Ayodhya, whom the Hindoos believe to have been an appearance on earth of the preserving power; to have been a conqueror of the highest renown, and the deliverer of nations from tyrants, as well as of his consort Sita from the giant Ravan king of Lanca; and to have commanded in chief a numerous and intrepid race of those large monkeys, which our naturalists, or some of them, have denominated Indian satyrs: his general, the prince of satyrs, was named *Hanumat*, or “with high cheek bones;” and, with workmen of such agility, he soon raised a bridge of rocks over the sea, part of which, say the Hindoos, yet remains; and it is probable the series of rocks to which the Mussulmans or the Portuguese have given the foolish name of *Adam's* (it should be called *Rama's*) bridge. Might not this

Rezan
||
Rhama.

Asiatic Researches,
vol. i.
p. 221, &c.

(A) The learned president, whose death will be lamented by every scholar, by the orientalist and the divine especially, imagines, that this would fully appear from comparing together the *Dionysiaca* of Nonnus and the *Ramayan* of Valmic, the first poet of the Hindoos. He adds, that, in his opinion, Rhama was the son of Cush, and that he might have established the first regular government in that part of Asia, in which his exploits are said to have been performed.

Rhama, **Rhamnus.** army of satyrs have been only a race of mountaineers, whom Rama, if such a monarch ever existed, had civilized? However that may be, the large breed of Indian apes is at this moment held in high veneration by the Hindoos, and fed with devotion by the Brahmans, who seem in two or three places on the banks of the Ganges to have a regular endowment for the support of them: they live in tribes of three or four hundred, are wonderfully gentle (I speak as an eye-witness), and appear to have some kind of order and subordination in their little sylvan polity." The festival of Rhama is held on the 9th day of the new moon of Chaitra, on which the war of Lauca is dramatically represented, concluding with an exhibition of the fire ordeal, by which the victor's wife Sita gave proof of her connubial fidelity. Among the Hindoos there are a variety of very fine dramas of great antiquity on the story of Rhama.

There are three Rhamas mentioned in the Indian mythology, who, together with Krishna, the darling god of the Indian women, are described as youths of perfect beauty. The third Rhama is Krishna's elder brother, and is considered as the eighth Avatar (B), invested with an emanation of his divine radiance. Like all the Avatars, Rhama is painted with gemmed Ethiopian or Parthian coronets; with rays encircling his head, jewels in his ears, two necklaces, one straight and one pendant on his bosom, with dropping gems; garlands of well-disposed many-coloured flowers, or collars of pearls, hanging down below his waist; loose mantles of golden tissue or dyed silk, embroidered on the hems with flowers elegantly thrown over one shoulder, and folded like ribbands across the breast; with bracelets, two on one arm and on each wrist: all the Avatars are naked to the waists, and uniformly with dark azure flesh, in allusion probably to the tint of that primordial fluid on which Narayan moved in the beginning of time; but their skirts are bright yellow, the colour of the curious pericarpium in the centre of the water-lily.

RHAMNUS, the **BUCKTHORN**, in botany: A genus of the monogynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 43d order, *Dumosa*. The calyx is tubulous, with five minute scales surrounding the stamina; there is no corolla; the fruit is a berry. There are 27 species; of which the most remarkable are,

1. The catharticus, or common purging buckthorn, growing naturally in some parts of Britain. This grows to the height of 12 or 14 feet, with many irregular branches at the extremities. The leaves are oval-lanceolate, finely serrated on the edges, their nerves converging together. The flowers grow in clusters, one on each footstalk, white, and in this species divided into four segments: the fruit is a round black berry, containing four seeds. The juice of the berries is a

strong purgative, and is made use of for making the common syrup of buckthorn kept in the shops. The bark is emetic: the juice of the unripe berries with alum dyes yellow, of the ripe ones a fine green; the bark also dyes yellow. The green colour yielded by the berries, called by the French *verde vessie*, is much esteemed by miniature painters.

Of this species there are two varieties, viz. the dwarf buckthorn, a shrub of about a yard high, of a greenish colour but little show; and the long-leaved dwarf buckthorn, which is a larger shrub, with leaves somewhat larger, but in other respects very similar to the dwarf buckthorn.

2. The zizyphus is the species in which the lac insect* forms its cells, and produces the wax called *gum-lac*. See *LACCA*. * See *Cus.*

3. The lotus has the leaves, prickles, flowers, and fruit, of the zizyphus or jube; only with this difference, that the fruit is here round, smaller, and more luscious, and at the same time the branches, like those of the paliurus, are neither so much jointed nor crooked. The fruit is in great repute, tastes something like gingerbread, and is sold in the markets all over the southern districts of these kingdoms. The Arabs call it *aneb enta el seedra*, or *the jube of the seedra*; which Olavus Celsius had so high an opinion of, that he has described it as the dudaim of the scriptures. This species is very common in the Jereede and other parts of Bombay; and has been supposed by some to be the same plant with that celebrated by Homer for its enchanting property; though the latter is more generally supposed to have been a species of *DIOSPYROS* (which see). It is proper, however, to distinguish between both these shrubs and an herb often mentioned by the ancients under the name of *lotus*, which Homer mentions as being fed upon by the horses of Achilles, and Virgil as proper to increase the milk of sheep (see *LOTUS*). They are also different from the Egyptian *lotus* described by Herodotus; for which see *NYMPHÆA*.

4. The frangula, or berry-bearing alder, is a deciduous shrub, a native of England and most of the northern parts of Europe, and affords several varieties.

5. The Alpine, rough-leaved frangula, or berry-bearing alder, is also a deciduous shrub, and native of the Alps. It differs in no respect from the common sort, except that it has no thorns, and that it will grow to be rather taller, with tough, large, and doubly laciniated leaves. The smooth-leaved Alpine frangula is a variety of this species, with smooth leaves and of a lower growth.

6. The paliurus, or thorn of Christ, is a deciduous shrub or tree, a native of Palestine, Spain, Portugal, and Italy. It will grow to nearly the height of 14

C c 2

feet,

(B) *Avatar* means the descent of the deity in his capacity of preserver. The three first of these descents relate to some stupendous convulsion of our globe from the fountains of the deep, and the fourth exhibits the miraculous punishment of pride and impiety, appearing to refer to the deluge. Three of the others were ordained for the overthrow of tyrants or giants. Of these Avatars we have mentioned in the text, that Rhama is the eighth; Buddha, who appears to have been a reformer of the doctrines contained in Vedas, is the ninth: the tenth Avatar, we are told, is yet to come, and is expected to appear mounted (like the crowned conqueror in the Apocalypse) on a white horse, with a scimeter blazing like a comet to mow down all incorrigible and impenitent offenders who shall then be on the earth.

Rhamnus,
Rham-
phastos.

feet, and is armed with sharp thorns, two of which are at each joint, one of which is about half an inch long, straight, and upright; the other is scarcely half that length, and bent backward; and between them is the bud for next year's shoot. June is the time of flowering, and the flowers are succeeded by a small fruit, surrounded by a membrane. "This plant (says Hanbury) is undoubtedly the sort of which the crown of thorns for our Blessed Saviour was composed. The branches are very pliant, and the spines of it are at every joint strong and sharp. It grows naturally about Jerusalem, as well as in many parts of Judæa; and there is no doubt that the barbarous Jews would make choice of it for their cruel purpose. But what farther confirms the truth of these thorns being then used, are the ancient pictures of our Blessed Saviour's crucifixion. The thorns of the crown on his head exactly answer to those of this tree; and there is great reason to suppose these were taken from the earliest paintings of the Lord of Life: and even now our modern painters copy from them, and represent the crown as composed of these thorns. These plants, therefore, should principally have a share in those parts of the plantation that are more peculiarly designed for religious retirement; for they will prove excellent monitors, and conduce to due reflection on and gratitude to 'Him who hath loved us, and has washed us from our sins,' &c.

7. The common alaternus is an evergreen tree, and native of the south of Europe. There are several varieties of this species; the most remarkable of which are the broad-leaved and the jagged-leaved alaternus, which have all been confounded with the phillyrea.

8. The insectorius, or narrow-leaved buckthorn, is an evergreen shrub or tree, and native of Spain. It grows to the height of 10 or 12 feet, and sends forth several branches from the bottom to the top. They are covered with a blackish or dark-coloured bark, and each of them is terminated by a long sharp thorn. The fruit continues on the trees all winter, making a beautiful appearance among the narrow-clustered leaves at that season.

9. The oleoides, or olive-leaved buckthorn, is an evergreen shrub, and native of Spain, and grows to the height of 8 or 10 feet. It sends forth numerous branches, each of which is terminated by a long sharp spine. The flowers are small, of a whitish green colour, and are succeeded by round black berries.

RHAMPHASTOS, in ornithology, a genus belonging to the order of picæ. The bill is very large, and serrated outwardly. The nostrils are situated behind the base of the beak; and in most of the species the feet are toed, and placed two forwards and two backwards. The tongue is long, narrow, and feathered on the edges. Mr Latham enumerates 15 different species; of which the toucans are the most remarkable, and were formerly divided into four or five varieties, though Mr Latham makes them distinct species, of which we shall only describe that called the red-beaked toucan.

Plate
CCCCXXXVII.

This bird is about the size of a jackdaw, and of a similar shape, with a large head to support its monstrous bill: this bill, from the angles of the mouth to its point, is six inches and an half; and its breadth in the thickest part is a little more than two. Its thickness

near the head is one inch and a quarter; and it is a little rounded along the top of the upper chap, the under side being round also; the whole of the bill extremely slight, and a little thicker than parchment. The upper chap is of a bright yellow, except on each side, which is of a fine scarlet colour; as is also the lower chap, except at the base, which is purple. Between the head and the bill there is a black line of separation all round the base of the bill; in the upper part of which the nostrils are placed, and are almost covered with feathers; which has occasioned some writers to say that the toucan has no nostrils. Round the eyes, on each side of the head, is a space of bluish skin, void of feathers; above which the head is black, except a white spot on each side joining to the base of the upper chap. The hinder part of the neck, the back, wings, tail, belly, and thighs, are black. The under side of the head, throat, and the beginning of the breast, are white. Between the white on the breast, and the black on the belly, is a space of red feathers, in the form of a new moon, with its horns upwards. The legs, feet, and claws, are of an ash-colour; and the toes stand like those of parrots, two before and two behind.

It is reported by travellers, that this bird, though furnished with so formidable a beak, is harmless and gentle, being so easily made tame as to sit and hatch its young in houses. It feeds chiefly upon pepper, which it devours very greedily, gorging itself in such a manner that it voids it crude and unconcocted. This, however, is no objection to the natives from using it again: they even prefer it before that pepper which is fresh gathered from the tree; and seem persuaded that the strength and heat of the pepper is qualified by the bird, and that all its noxious qualities are thus exhausted.

Whatever be the truth of this report, nothing is more certain than that the toucan lives only upon a vegetable diet; and, in a domestic state, to which it is frequently brought in the warm countries where it is bred, it is seen to prefer such food to all other. Pozzo, who bred one tame, asserts, that it leaped up and down, wagged the tail, and cried with a voice resembling that of a magpie. It fed upon the same things that parrots do; but was most greedy of grapes, which, being plucked off one by one, and thrown in the air, it would most dexterously catch before they fell to the ground. Its bill, he adds, was hollow, and upon that account very light, so that it had but little strength in so apparently formidable a weapon; nor could it peck or strike smartly therewith. But its tongue seemed to assist the efforts of this unwieldy machine: it was long, thin, and flat, not unlike one of the feathers on the neck of a dunghill cock; this it moved up and down, and often extended five or six inches from the bill. It was of a flesh colour, and remarkably fringed on each side with very small filaments, exactly resembling a feather.

It is probable that this long tongue has greater strength than the thin hollow beak that contains it. It is likely that the beak is only a kind of sheath for this peculiar instrument, used by the toucan, not only in making itself a nest, but also in obtaining its provision. Nothing is more certain, than that this bird builds its nest in holes of trees, which have been previously

Rham-
phastos.

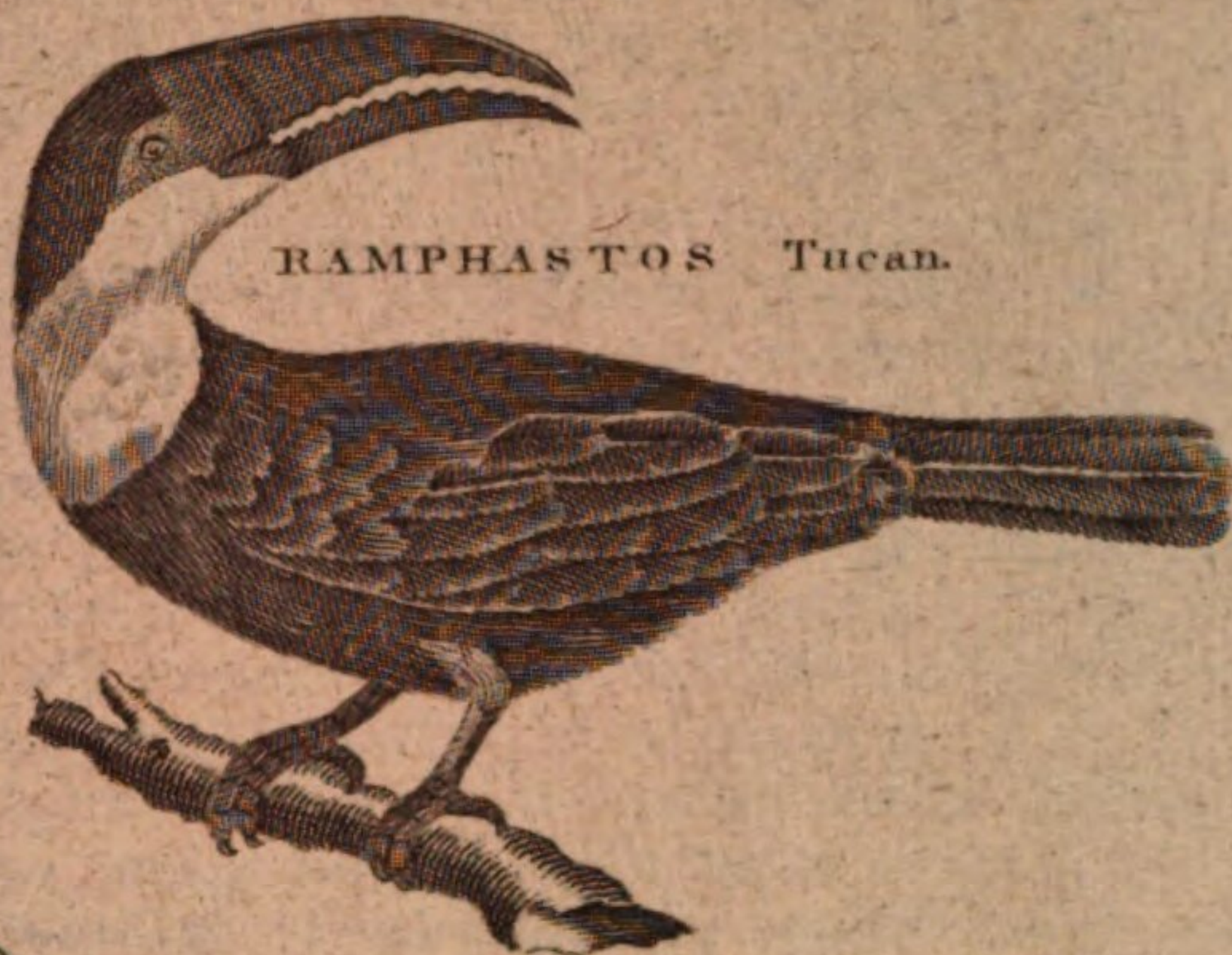
Ricinus Americanus.



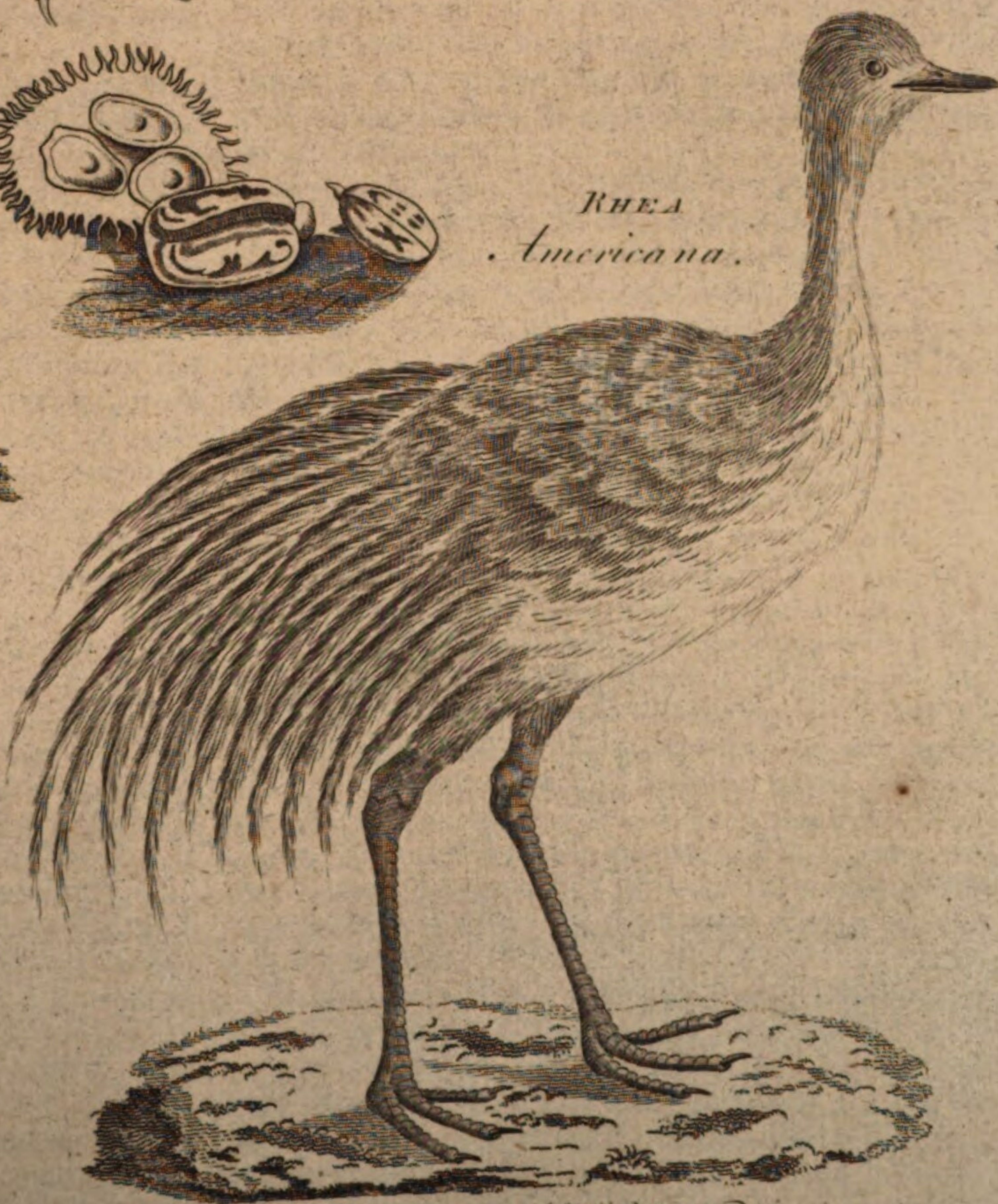
Ricinus Communis.



RAMPHASTOS Tucan.



RHEA
Americana.



A. Bell Pin. H. at. Sculptor fecit.

Rhapis
||
Rhapsody.

viously scooped out for this purpose; and it is not very likely that so feeble a bill could be very serviceable in working upon such hard materials.

Be this as it will, there is no bird secures its young better from external injury than the toucan. It has not only birds, men, and serpents, to guard against; but a numerous tribe of monkeys, still more prying, mischievous, and hungry, than all the rest. The toucan, however, scoops out its nest into the hollow of some tree, leaving only a hole large enough to go in and out at. There it sits, with its great beak, guarding the entrance; and if the monkey ventures to offer a visit of curiosity, the toucan gives him such a welcome, that he presently thinks proper to pack off, and is glad to escape with safety.

This bird is only found in the warm climates of South America, where it is in great request, both for the delicacy of its flesh, which is tender and nourishing, and for the beauty of its plumage, particularly the feathers of the breast. The skin of this part the Indians pluck off, and when dry glue to their cheeks; and this they consider as an irresistible addition to their beauty.

RHAPIS, in botany: A genus of the monogynia order, belonging to the hexandria class of plants; and in the natural method ranking under the first order, *Palme*. The calyx is a monophyllous trifid spathe; the corolla monopetalous and trifid. There are two species, viz. 1. *Flabilliformis*, or ground-ratan, a native of China; 2. *Arundinacea*, simple leaved rhaps, a native of Carolina.

RHAPSODI, RHAPSODISTS, in antiquity, persons who made a business of singing pieces of Homer's poems. Cuper informs us, that the Rhapsodi were clothed in red when they sung the Iliad, and in blue when they sung the Odyssey. They performed on the theatres, and sometimes strove for prizes in contests of poetry, singing, &c. After the two antagonists had finished their parts, the two pieces or papers they were written in were joined together again: whence the name, viz. from *ραπτω*, *suo*, and *ὁδὸν canticum*: but there seem to have been other Rhapsodi of more antiquity than these people, who composed heroic poems or songs in praise of heroes and great men, and sung their own compositions from town to town for a livelihood; of which profession Homer himself is said to have been. See BARD.

RHAPSODOMANCY, an ancient kind of divination performed by pitching on a passage of a poet at hazard, and reckoning on it as a prediction of what was to come to pass. There were various ways of practising this rhapsodomancy. Sometimes they wrote several papers or sentences of a poet on so many pieces of wood, paper, or the like, shook them together in an urn, and drew out one which was accounted the lot: sometimes they cast dice on a table whereon verses were written, and that whereon the die lodged contained the prediction. A third manner was by opening a book, and pitching on some verse at first sight. This method they particularly called the *sortes Prænestinae*; and afterwards, according to the poet, made use of, *sortes Homericae*, *sortes Virgilianæ*, &c. See SORTES.

RHAPSODY, in antiquity, a discourse in verse sung or rehearsed by a rhapsodist. Others will have rhapsody to signify a collection of verses, especially

those of Homer, which having been a long time dispersed in pieces and fragments, were at length by Pisistratus's order digested into books called *rhapsodies*, from *ραπτω* *suo*, and *ὁδὸν canticum*. Hence, among moderns, *rhapsody* is also used for an assemblage of passages, thoughts, and authorities, raked together from divers authors, to compose some new piece.

RHE, or REE, a little island in the Bay of Biscay, near the coast of Aunis in France. It was taken during the war with France which ended in 1763, in the expedition commanded by Hawke and Mordaunt.

RHEA AMERICANA. The American ostrich of authors has been frequently mentioned, but till of late years very imperfectly known; being blended by some with other genera, although forming of itself a distinct one, differing in many things from all others. The older writers, however, have kept it separate. It does not occur to us whether any author has figured this bird except *Nieremberg*, whose representation conveys no just idea, which is wonderful, as it is to be met with in sufficient plenty in various parts of South America; nor has the bird itself made its appearance in the cabinets of collectors, until the one now in the Leverian museum.

M. Bajon, in his *Mem. sur Cayenne*, gives a figure and description of the jabirus, and seems clear that this bird is no other than the ostrich of America. From this assertion, Mr Latham, in his *Synopsis*, leaves the matter undecided; but this author, in his *Index Ornithol.* from having met with the specimen above alluded to, and supported in an account of its manners given by Molina in his *Hist. Nat. du Chili*, treats this matter on more certain grounds, so as to enable us to give the following description.

In size the American ostrich is very little inferior to the common one: the bill is sloped not unlike that of a goose, being flat on the top and rounded at the end: the eyes are black, and the lids furnished with hairs: the head is rounded, and covered with downy feathers: the neck is two feet eight inches long, and feathered also: from the tip of one wing to that of the other extended, the length is eight feet; but from the want of continuity of the webs of the feathers, and their laxity of texture, the bird is unable to raise itself from the ground; it is, however, capable of greatly assisting itself by their motion in running, which it does very swiftly: the legs are stout, bare of feathers above the knees, and furnished with three toes, all placed forwards, each having a straight and stout claw as in the cassowary; on the heel is a callous knob, serving in place of a back toe: the general colour of plumage is dull grey mixed with white, inclining to the latter on the under parts: the tail is very short, and not conspicuous, being entirely covered with long loose and floating feathers, having origin from the lower part of the back and rump, and entirely covering it: the bill and legs are brown.

Molina observes that this bird varies; the body in some being white, in others black. In respect to manners, it is said to be a general feeder, but more fond of flies, which it catches with great dexterity, and will also, like the common ostrich, swallow bits of iron and any other trash offered to it. In common with the ostrich of the old world, it lays a number of eggs, from 40 to 60, in the sand, each of them holding a quart;

Rhe.
Rhea.

but

Rheedia
||
Rhetores.

but it differs from that bird in many particulars, especially in wanting the callosity on the sternum, and spars on the wing. With these last the common ostrich is known to defend itself: in defect of them, the one here treated of uses the feet with such address as to become at once a furious and dangerous antagonist. The female calls its young ones together with a kind of whistling note somewhat similar to that of a man: when young it is very tame, frequently following the first creature it meets with. The flesh of this bird is said to be very unpalatable. It is found in various parts of South America, from Patagonia to Guiana, and is known by the name of *Chouque*. We are happy to be able to present our readers with an accurate drawing of the bird. See Plate CCCCXXXVII.

RHEEDIA, in botany: A genus of the monogynia order, belonging to the polyandria class of plants; and in the natural method ranking with those of which the order is doubtful. The corolla is tetrapetalous; there is no calyx; and the fruit is a trispermous berry.

RHEGIUM (anc. geog.), so very ancient a city as to be supposed to take its name from the violent bursting of the coast of Italy from Sicily; thought to have been formerly conjoined (Mela, Virgil). A city of the Bruttii, a colony of Chalcidians from Eubœa: a strong barrier opposed to Sicily (Strabo); mentioned by Luke; surnamed *Julium* (Ptolemy), from a fresh supply of inhabitants sent thither by Augustus, after driving Sextus Pompeius out of Sicily (Strabo); and thus was in part a colony, retaining still the right of a municipium (Inscription). The city is now called *Reggio*, in the Farther Calabria.

RHEIMS, a city of France in Champagne, and capital of Rhemois. It is one of the most ancient, celebrated, and largest places in the kingdom, had an archbishop's see, whose archbishop was duke and peer of France. It is about four miles in circumference, and contains several fine squares, well-built houses, and magnificent churches. It had a mint, an university, and five abbeys, the most famous of which was that of St Remy. There are also several triumphal arches and other monuments of the Romans. It is seated on the river Vesie, on a plain surrounded by hills, which produce excellent wine. E. Long. 4. 8. N. Lat. 49. 14.

RHENISH WINE, that produced on the hills about Rheims. This wine is much used in medicine as a solvent of iron, for which it is well calculated on account of its acidity. Dr Percival observes, that it is the best solvent of the Peruvian bark; in which, however, he thinks its acidity has no share, because an addition of vinegar to water does not augment its solvent power.

RHETORES, amongst the Athenians, were ten in number, elected by lot to plead public causes in the senate-house or assembly. For every cause in which they were retained, they received a drachm out of the public money. They were sometimes called *Συνγοροί*, and their fee *το Συναγορικόν*. No man was admitted to this office before he was 40 years of age, though others say 30. Valour in war, piety to their parents, prudence in their affairs, frugality, and temperance, were necessary qualifications for this office, and every candidate underwent an examination concerning these virtues previous to the election. The orators at Rome

were not unlike the Athenian rhetores. See ORA-
TOR.

RHETORIANS, a sect of heretics in Egypt, so denominated from Rhetorius their leader. The distinguishing tenets of this heresiarch, as represented by Philastrius, was, that he approved of all the heresies before him, and taught that they were all in the right.

RHETORIC, the art of speaking copiously on any subject, with all the advantages of beauty and force. See ORATORY.

RHEUM, a thin serous humor, occasionally oozing out of the glands about the mouth and throat.

RHEUM, *Rhubarb*: A genus of the monogynia order, belonging to the enneandria class of plants; and in the natural method ranking under the 12th order, *Holoracea*. There is no calyx; the corolla is sexfid and persistent; and there is one triquetrous seed. There are five species, viz. 1. The rhaponticum, or common rhubarb, hath a large, thick, fleshy, branching, deeply-striking root, yellowish within; crowned by very large, roundish, heart-shaped smooth leaves, on thick, slightly-furrowed foot-stalks: and an upright strong stem, two or three feet high, adorned with leaves singly, and terminated by thick close spikes of white flowers. It grows in Thrace and Scythia, but has been long in the English gardens. Its root affords a gentle purge. It is however of inferior quality to some of the following sorts; but the plant being astringent, its young stalks in spring, being cut and peeled, are used for tarts. 2. The palmatum, palmated-leaved true Chinese rhubarb, hath a thick fleshy root, yellow within; crowned with very large palmated leaves, being deeply divided into acuminate segments, expanded like an open hand; upright stems, five or six feet high or more, terminated by large spikes of flowers*. This is now proved to be the true foreign rhubarb, the purgative quality of which is well known. 3. The compactum, or Tartarian rhubarb, hath a large, fleshy, branched root, yellow within; crowned by very large, heart-shaped somewhat lobated, sharply indented, smooth leaves, and an upright large stem, five or six feet high, garnished with leaves singly, and branching above; having all the branches terminated by nodding panicles of white flowers. This has been supposed to be the true rhubarb; which, however, though of superior quality to some sorts, is accounted inferior to the rheum palmatum. 4. The undulatum, undulated, or waved-leaved Chinese rhubarb, hath a thick, branchy, deep-striking root, yellow within; crowned with large, oblong, undulate, somewhat hairy leaves, having equal foot-stalks, and an upright firm stem, four feet high; garnished with leaves singly, and terminated by long loose spikes of white flowers. 5. The Arabian ribes, or currant rhubarb of Mount Libanus, hath a thick fleshy root, very broad leaves, full of granulated protuberances, and with equal foot-stalks, and upright firm stems, three or four feet high, terminated by spikes of flowers, succeeded by berry-like seeds, being surrounded by a purple pulp. All these plants are perennial in root, and the leaves and stalks are annual. The roots being thick, fleshy, generally divided, strike deep into the ground; of a brownish colour without and yellow within: the leaves rise in the spring, generally come up in a large head folded together,

Rhetorians
||
Rheum.

* See Botany, p. 439, and Plate CVII.

Rheum.

together, gradually expanding themselves, having thick foot-stalks; and grow from one to two feet high, or more, in length and breadth, spreading all round: amidst them rise the flower-stems, which are garnished at each joint by one leaf, and are of strong and expeditious growth, attaining their full height in June, when they flower; and are succeeded by large triangular seeds, ripening in August. Some plants of each sort merit culture in gardens for variety; they will effect a singularity with their luxuriant foliage, spikes, and flowers: and as medical plants, they demand culture both for private and public use.

They are generally propagated by seeds sowed in autumn soon after they are ripe, or early in the spring, in any open bed of light deep earth; remarking, those intended for medical use should generally be sowed where they are to remain, that the roots, being not disturbed by removal, may grow large. Scatter the seeds thinly, either by broad-cast all over the surface, and raked well in; or in shallow drills a foot and half distance, covering them near an inch deep. The plants will rise in the spring, but not flower till the second or third year: when they, however, are come up two or three inches high, thin them to eight or ten inches, and clear out all weeds; though those designed always to stand should afterwards be hoed out to a foot and a half or two feet distance: observing, if any are required for the pleasure ground, &c. for variety, they should be transplanted where they are to remain in autumn, when their leaves decay, or early in spring, before they shoot: the others remaining where sowed, must have the ground kept clean between them; and in autumn, when the leaves and stalks decay, cut them down, and slightly dig the ground between the rows of plants, repeating the same work every year. The roots remaining, they increase in size annually: and in the second or third year many of them will shoot up stalks, flower, and perfect seeds; and in three or four years the roots will be arrived to a large size; though older roots are generally preferable for medical use.

In Mr Bell's Travels we have an account of some curious particulars relating to the culture of rhubarb. He tells us, that the best rhubarb grows in that part of Eastern Tartary called *Mongalia*, which now serves as a boundary between Russia and China. The marmots contribute greatly to the culture of the rhubarb. Wherever you see 10 or 20 plants growing, you are sure of finding several burrows under the shades of their broad-spreading leaves. Perhaps they may sometimes eat the leaves and roots of this plant; however, it is probable the manure they leave about the roots contributes not a little to its increase; and their casting up the earth, makes it shoot out young buds and multiply. This plant does not run, and spread itself, like docks and others of the same species; but grows in tufts, at uncertain distances, as if the seeds had been dropped with design. It appears that the Mongals never accounted it worth cultivating; but that the world is obliged to the marmots for the quantities scattered, at random, in many parts of this country: for whatever part of the ripe seed happens to be blown among the thick grass, can very seldom reach the ground, but must there wither and die; whereas, should it fall among the loose earth thrown up by

the marmots, it immediately takes root, and produces a new plant.

After digging and gathering the rhubarb, the Mongals cut the large roots into small pieces, in order to make them dry more readily. In the middle of every piece they scoop a hole, through which a cord is drawn, in order to suspend them in any convenient place. They hang them for the most part about their tents, and sometimes on the horns of their sheep. This is a most pernicious custom, as it destroys some of the best part of the root: for all about the hole is rotten and useless; whereas, were people rightly informed how to dig and dry this plant, there would not be one pound of refuse in an hundred; which would save a great deal of trouble and expence, that much diminish the profits on this commodity. At present, the dealers in this article think these improvements not worthy of their attention, as their gains are more considerable on this than on any other branch of trade. Perhaps the government may hereafter think it proper to make some regulations with regard to this matter.

Two sorts of rhubarb are met with in the shops. The first is imported from Turkey and Russia, in roundish pieces freed from the bark, with a hole through the middle of each: they are externally of a yellowish colour, and on cutting appear variegated with lively reddish streaks. The other, which is less esteemed, comes immediately from the East Indies, in longish pieces, harder, heavier, and more compact than the foregoing. The first sort, unless kept very dry, is apt to grow mouldy and worm-eaten; the second is less subject to these inconveniences. Some of the more industrious artists are said to fill up the worm-holes with certain mixtures, and to colour the outside of the damaged pieces with powder of the finer sorts of rhubarb, and sometimes with cheaper materials: this is often so nicely done, as effectually to impose upon the buyer, unless he very carefully examines each piece. The marks of good rhubarb are, that it be firm and solid, but not stinty; that it be easily pulverable, and appear, when powdered, of a fine bright yellow colour; that, upon being chewed, it impart to the spittle a saffron tinge, without proving slimy or mucilaginous in the mouth. Its taste is subacid, bitterish, and somewhat astringent; the smell lightly aromatic.

Rhubarb is a mild cathartic, which operates without violence or irritation, and may be given with safety even to pregnant women and children. Besides its purgative quality, it is celebrated for an astringent one, by which it strengthens the tone of the stomach and intestines, and proves useful in diarrhoeas and disorders proceeding from a laxity of the fibres. Rhubarb in substance operates more powerfully as a cathartic than any of the preparations of it. Watery tinctures purge more than the spirituous ones; whilst the latter contain in greater perfection the aromatic, astringent, and corroborating virtues of the rhubarb. The dose, when intended as a purgative, is from a scruple to a dram or more.

The Turkey rhubarb is, among us, universally preferred to the East India sort, though this last is for some purposes at least equal to the other; it is manifestly more astringent, but has somewhat less of an aromatic flavour. Tinctures drawn from both with rectified spirit have nearly the same taste: on distilling

Rheum.

Rheum. off the menstruum, the extract left from the tincture of the East India rhubarb proved considerably the strongest.

Rhubarb has been cultivated of late in this country with considerable success, and for medical purposes is found to equal that of foreign growth, as is proved by the Transactions of the London Society for encouraging Arts, Manufactures, and Commerce, who have rewarded several persons both for cultivating and curing it. In the Transactions for 1792, the gold medal was adjudged to Sir William Fordyce, for raising from seed in the year 1791 upwards of 300 plants of the true rhubarb, or *rheum palmatum* of the London Pharmacopœia 1788, which in the second and third weeks of October were transplanted into a deep loam, at four feet distance from each other, according to rules laid down by the society. In 1793 it was adjudged to Mr Thomas Jones, from whose papers we derive the following information.

After giving an accurate account of his experiments and observations, he concludes, that the season for sowing is the spring about March or April, or in autumn about August and September; that those plants which are raised in the spring should be transplanted in autumn, and *vice versa*; that they cannot have too much room; that room and time are essentially necessary to their being large, of a good appearance, and perhaps to the increase of their purgative qualities; that to effect these purposes, the soil must be light, loamy, and rich, but not too much so, lest the roots should be too fibrous; that their situation can scarcely be too dry, as more evils are to be expected from a superabundance of moisture than any actual want of it: and lastly, we may conclude, that in particular the injuries which they are subject to are principally during their infancy, and to be imputed to insects and inattention to the planting season; afterwards, from too great an exposure to frost: but that none can be dreaded from heat; and that in general they are hardy and easy of cultivation, when arrived beyond a certain term.

The method of curing rhubarb, as proposed by Dr Tirruogel of Stockholm, is as follows: "No roots should be taken up till they have been planted ten years: they should be taken out of the ground either in winter, before the frost sets in, or in the beginning of spring, and immediately cut into pieces, and carefully barked; let them be spread upon a table for three or four days, and be frequently turned, that the juices may thicken or condense within the roots. After this process, make a hole in each piece, and put a thread through it; by which let them hang separately, either within doors, or in some sheltered shady shed. Some persons dry them in a different way: they inclose the roots in clay, and make a hole in the clay, about the thickness of a goose-quill, and in this manner hang up each piece to dry separately, that the moisture may not evaporate, nor the strength of the root be weakened. But the methods which the Tartars follow is a bad one: they dig the roots out of the deserts where they grow, bark them, and immediately string them, and hang them round the necks of their camels, that they may dry as they travel; but this greatly lessens the medicinal virtue of the root."

Mr Thomas Halley of Pontefract in Yorkshire, to whom the London Society voted the silver medal in

Rheum. 1793, informs us, that his father tried various experiments for curing rhubarb, as washing, brushing, barking, and peeling, and he dried them in the sun, on a kiln, in a stove, or in a warm kitchen. But of the success of all or either of these methods we have no account, owing to the death of Mr Halley's father. He sent, however, to them five different specimens, which the Society acknowledges to be superior to any rhubarb hitherto cured in England, and produced to them. The roots sent, Mr Halley says, were planted about the year 1781 in a light sandyish soil, but were much neglected. They were taken up in the spring of 1792, and being thoroughly divested of the adhering earth, were placed for some weeks on the floor of a cool warehouse: the fibres were then taken off, cut up, and dried on the flue of a green-house; but, from mismanagement, were entirely spoiled. The prime roots were severed in small pieces, peeled clean, and thoroughly cleared of every particle of unsoundness. Part was separately laid in sieves, and the remainder perforated, strung, and suspended in festoons from the ceiling of a warm kitchen. The manner of dressing consists in paring off the external coat with a sharp knife, as thin and clean as possible, and then finishing it off by a piece of fish-skin, with its own powder; which powder may be procured from the chips and small pieces, either by grinding or pounding it in a large mortar.

In the year 1794 the Society adjudged the gold medal to Mr William Hayward of Hanbury, Oxfordshire, for propagating rhubarb by offsets taken from the crowns of large plants, instead of seeds, for the purpose of bringing it to perfection in a shorter time, which fully answered his expectations. Mr Hayward was a candidate in the year 1789 for the gold medal; but having misunderstood their rules, he was not entitled to it, though with great propriety they voted to him the silver medal; in consequence of which he sent them his method of culture and cure. His method of cultivating Turkey rhubarb from seed is thus explained to the Society: "I have usually sown the seed about the beginning of February, on a bed of good soil (if rather sandy the better), exposed to an east or west aspect, in preference to the south; observing a full sun to be prejudicial to the vegetation of the seeds, and to the plants whilst young. The seeds are best sown moderately thick (broad-cast), treading them regularly in, as is usual with parsneps and other light seeds, and then raking the ground smooth. I have sometimes, when the season has been wet, made a bed for sowing the rhubarb seeds upon, about two feet thick, with new dung from the stable, covering it near one foot thick with good soil. The intent of this bed is not for the sake of warmth, but solely to prevent the rising of earthworms, which, in a moist season, will frequently destroy the young crop. If the seed is good, the plants often rise too thick; if so, when they have attained six leaves they should be taken carefully up (where too close), leaving the standing crop eight or ten inches apart: those taken up may be planted at the same distance, in a fresh spot of ground, in order to furnish other plantations. When the plants in general are grown to the size that cabbage-plants are usually set out for a standing crop, they are best planted where they are to remain, in beds four feet wide, one row along the middle of the bed, leaving two yards distance betwixt the plants,

Rheum. plants, allowing an alley between the beds about a foot wide, for conveniency of weeding the plants. In the autumn, when the decayed leaves are removed, if the shoveling of the alleys are thrown over the crowns of the plants, it will be found of service.

His mode of cultivating the same plant by offsets is thus given: "On taking up some plants the last spring, I slipped off several offsets from the heads of large plants: these I set with a dibble about a foot apart, in order, if I found them thrive, to remove them into other beds. On examining them in the autumn, I was surprised to see the progress they had made, and pleased to be able to furnish my beds with 40 plants in the most thriving state. Though this was my first experiment of its kind, I do not mean to arrogate the discovery to myself, having known it recently tried by others, but without being informed of their success. I have reason to think this valuable drug will, by this method, be brought much sooner to perfection than from seed."

His method of curing rhubarb is thus described: "The plants may be taken up either early in the spring, or in autumn, when the leaves are decayed, in dry weather if possible, when the roots are to be cleared from dirt (without washing): let them be cut into pieces, and with a sharp knife freed from the outer coat, and exposed to the sun and air for a few days, to render the outside a little dry. In order to accelerate the curing of the largest pieces, a hole may be scooped out with a penknife: these and the smaller parts are then to be strung on packthread, and hung up in a warm room (I have always had the conveniency of such a one over a baker's oven), where it is to remain till perfectly dry. Each piece may be rendered more slightly by a common file, fixing it in a small vice during that operation: afterwards rub over it a very fine powder, which the small roots furnish in beautiful perfection, for this and every other purpose where rhubarb is required."

In the year 1794, too, the Society adjudged the gold medal to Mr Ball for his method of curing the true rhubarb, which is as follows: "I take the roots up when I find the stalks withering or dying away, clean them from the earth with a dry brush, cut them in small pieces of about four or five inches in breadth, and about two in depth, taking away all the bark, and make a hole in the middle, and string them on packthread, keeping every piece apart; and every morning, if the weather is clear and fine, I place them in the open part of the garden, on stages, erected by fixing small posts about six feet high in the ground, and six feet asunder, into which I fix horizontal pegs, about a foot apart, beginning at the top; and the rhubarb being stringed crosswise on small poles, I place them on these pegs; so that if it should rain, I could easily remove each pole with the suspended pieces, into any covered place. I never suffer them to be out at night, as the damps at this season would be apt to mould them; and if at any time I perceive the least mark of mould, I rub it off with a dry cloth. In some of the pieces of rhubarb which I have cured this year, I have made holes about half an inch diameter in the middle, for the free passage of air, and

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have found that every one of these pieces dried better than the others where no such holes were made; and have likewise hung several strings in the kitchen, and never exposed them in the open air, and found them to dry exceedingly well, and much better than those in the open air. Some years since I dried a quantity of rhubarb on a malt-kiln, keeping up the thermometer to 80 degrees, which answered well, but I think rather dried too quick: the roots which I have cured this year are a part of the plantation of 1789, and for which the Society was so kind as to give me a medal (A)."

RHEXIA, in botany: A genus of the monogynia order, belonging to the octandria class of plants; and in the natural method ranking with those of the 17th order, *Calycanthemæ*. The calyx is quadrifid, with four petals inserted into it; the antheræ are declining; the capsule is quadrilocular, within the belly of the calyx.

RHINANTHUS, in botany: A genus of the angiospermia order, belonging to the didynamia class of plants; and in the natural method ranking under the 40th order, *Personatæ*. The calyx is quadrifid, and ventricose; the capsule bilocular, obtuse, and compressed.

RHINE, a large river of Germany, famous both in ancient and modern history. It rises among the Alpes Lepontia, or Grisons; and first traversing the Lacus Acronius, divides the Rhæti and Vindelici from the Helvetii, and then the Germans from the Gauls and Belgæ; and running from south to north for the greatest part of its way, and at length bending its course west, it empties itself at several mouths (Cæsar); at three mouths into the German ocean, (Pliny); viz. the western, or Helius; the northern, or Fleuvus; and the middle between both these, which retains the original name, *Rhenus*: and in this Ptolemy agrees.—Mela and Tacitus mention two channels, and as many mouths, the right and left; the former running by Germany, and the latter by Gallia Belgica: and thus also Asinius Pollio, and Virgil; the cut or trench of Drusus not being made in their time, whereby the middle channel was much drained and reduced, and therefore overlooked by Tacitus and Mela; and which Pliny calls the *Scanty*. To account for Cæsar's several mouths, is a matter of no small difficulty with the commentators; and they do it no otherwise than by admitting that the Rhine naturally formed small drains or rivulets from itself; the cut of Drusus being long posterior to him; in whose time Asinius Pollio, quoted by Strabo, who agrees with him therein, affirmed that there were but two mouths, finding fault with those who made them more: and he must mean the larger mouths, which emitted larger streams. The Romans, especially the poets, used the term *Rhenus* for Germany, (Martial).—At present, the river, after entering the Netherlands at Schenkinhaus, is divided into several channels, the two largest of which obtain the names of the *Lech* and the *Waal*, which running thro' the United Provinces, falls into the German ocean below Rotterdam.

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Lower

(A) The Society also adjudged to Mr Ball the medal in 1790, for cultivating rhubarb.

Rhine
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Rhinegau.

Lower Circle of the RHINE, consists of the palatinate of the Rhine, and the three ecclesiastical electorates, viz. those of Cologne, Mentz, and Triers.

Upper Circle of the RHINE, consisted of the landgraviates of Alsace and Hesse, comprehending the Weteraw; but now only Hesse can be accounted a part of Germany, Alsace being long ago united to France.

RHINEBERG, a town of Germany, in the circle of the Lower Rhine, and diocese of Cologne. It was in the possession of the French, but restored to the archbishop of Cologne by the treaty of Utrecht. It is seated on the Rhine, in E. Long. 6. 39. N. Lat. 51. 36.

RHINECK, a town of Germany, in the archbishopric of Cologne, seated on the Rhine, E. Long. 7. 53. N. Lat. 50. 27.—There is another town of the same name in Switzerland, capital of Rhinthal, seated on the Rhine, near the lake of Constance, with a good castle. E. Long. 9. 53. N. Lat. 47. 38,

RHINFELD, a small but strong town of Germany, in the circle of Suabia, and the best of the four forest-towns belonging to the house of Austria. It has been often taken and retaken in the German wars; and is seated on the Rhine, over which there is a handsome bridge. E. Long. 7. 53. N. Lat. 47. 40.

RHINEGAU, a beautiful district of the electorate of Mentz, is situated on the Rhine, about three miles from the city of Mentz, and is so populous that it looks like one entire town intermixed with gardens and vineyards. The Rhine here grows astonishingly wide, and forms a kind of sea, near a mile broad, in which are several well wooded little islands. The Rhinegau forms an amphitheatre, the beauties of which are beyond all description. At Walluf, the very high hills come nearly down to the river side; from thence they recede again into the country, forming a kind of half circle, the other end of which is 15 miles off at Rudesheim, on the banks of the Rhine. The banks of the river, the hills which form the circles, and the slopes of the great mountains, are thick sown with villages and hamlets. The white appearance of the buildings, and the fine blue slated roofs of the houses playing amidst the various green of the landscape, have an admirable effect. In the space of every mile, as you sail down the river, you meet with a village which in any other place would pass for a town. Many of the villages contain from 300 to 400 families; and there are 36 of them in a space of 15 miles long and six miles broad, which is the width of this beautiful amphitheatre. The declivities of all the hills and mountains are planted thick with vineyards and fruit trees, and the thick wooded tops of the hills cast a gloomy horror over the otherwise cheerful landscape. Every now and then a row of rugged hills run directly down to the shore, and domineer majestically over the lesser hills under them. On one of these great mountains, just about the middle of the Rhinegau, you meet with *Johannis-Berg*, a village which produces some of the best Rhenish. Before this village is a pretty little rising, and near the banks of the river there is a very fine old castle, which gives unspeakable majesty to the whole landscape. Indeed, in every village, you meet with some or other large building, which contributes very much to the decoration of the whole. This country is indebted for its

riches to this semicircular hill, which protects it from the cold winds of the east and north, at the same time that it leaves room enough for the sun to exercise his benign influences. The groves and higher slopes of the hills make excellent pastures, and produce large quantities of dung, which, in a country of this sort, is of inestimable value.

The bank of the Rhine, opposite to the Rhinegau, is exceedingly barren, and heightens the beauty of the prospect on the other side by the contrast it exhibits; on this side, you hardly meet above three or four villages, and these are far distant from each other. The great interval between them is occupied by heaths and meadows, only here and there a thick bush affords some shade, and a few corn fields among the villages enliven the gloomy landscape. The back ground of this country is the most picturesque part of it. It is formed by a narrow gullet of mountains, which diminish in perspective between Rudesheim and Bingen. Perpendicular mountains and rocks hang over the Rhine in this place, and seem to make it the dominion of eternal night. At a distance, the Rhine seems to come out of this landscape through a hole under ground; and it appears to run tediously, in order to enjoy its course through a pleasant country the longer. Amidst the darkness which covers this back ground, the celebrated Mouse tower seems to swim upon the river. In a word, there is not any thing in this whole tract that does not contribute something to the beauty and magnificence of the whole; or, if I may be permitted the expression, to make the paradise more welcome. As you sail along the Rhine, between Mentz and Bingen, the banks of the river form an oval amphitheatre, which makes one of the richest and most picturesque landscapes to be seen in Europe. The inhabitants of these regions are some of them extremely rich, and some extremely poor. The happy middle state is not for countries the chief product of which is wine; for, besides that the cultivation of the vineyard is infinitely more troublesome and expensive than agriculture, it is subjected to revolutions, which in an instant reduce the holder of land to the condition of a day-labourer. It is a great misfortune for this country, that, though restrained by law, the nobility are, through connivance of the Elector, allowed to purchase as much land as they please. The peasant generally begins by running in debt for his vineyard; so that if it does not turn out well, he is reduced to day-labour, and the rich man extends his possessions to the great detriment of the country. There are several peasants here, who having incomes of 30, 50, or 100,000 guilders a-year, have laid aside the peasant, and assumed the wine-merchant; but, splendid as their situation is, it does not compensate, in the eyes of the humane man, for the sight of so many poor people with which the villages swarm. In order to render a country of this kind prosperous, the state should appropriate a fund to the purpose of maintaining the peasant in bad years, and giving him the assistance which his necessities, and his want of ready money, may from time to time make convenient.

The inhabitants of the Rhinegau are a handsome and uncommonly strong race of men. You see at the very first aspect that their wine gives them merry hearts and sound bodies. They have a great deal of natural wit, and a vivacity and jocoseness, which distinguishes them

very

*Riesbach's
Travels
through
Germany,
iii. 226.*

Rhinoceros
Rhinoceros

very much from their neighbours. You need only compare them with some of these, to be convinced that the drinker of wine excels the drinker of beer and water, both in body and mind, and that the inhabitant of the south is much stouter than he who lives in the north; for though the wine drinker may not have quite as much flesh as he who drinks only beer, he has better blood, and can bear much more work. Tacitus had already observed this, in his treatise *De moribus Germanorum*. "The large and corpulent bodies of the Germans (says he) have a great appearance, but are not made to last." At that time almost all the Germans drank only water; but the mere drinking of wine has effected a revolution in several parts of Germany, which makes the present inhabitants of these countries very different from those described by Tacitus. Black and brown hair is much commoner here than the white, which made the Germans so famous in old Rome. "It will be easily imagined (says Baron Reisbeck), that the monks fare particularly well in so rich a country. We made a visit to the prelate of Erbach. These lordly monks, for so in every respect they are, have an excellent hunt, rooms magnificently furnished, billiard tables, half a dozen beautiful singing women, and a stupendous wine cellar, the well ranged batteries of which made me shudder. A monk, who saw my astonishment at the number of the casks, assured me, that, without the benign influence which flowed from them, it would be totally impossible for the cloister to subsist in so damp a situation."

RHINFELS, a castle of Germany, in the circle of the Lower Rhine, in a county of the same name. It is looked upon as one of the most important places seated on the Rhine, as well in regard to its strength as situation. It is near St Goar, and built on a craggy rock. This fortress commands the whole breadth of the Rhine, and those who pass are always obliged to pay a considerable toll. In the time of war it is of great importance to be masters of this place. E. Long. 7. 43. N. Lat. 50. 3.

RHINLAND, a name given to a part of South Holland, which lies on both sides the Rhine, and of which Leyden is the capital town.

RHINOCEROS, in zoology, a genus of quadrupeds belonging to the order of belluæ. The name is entirely Greek; but these animals were totally unknown to the ancient Greeks. Aristotle takes no notice of them, nor any other Greek writer till Strabo, nor Roman till Pliny. It is probable they did not frequent that part of India into which Alexander had penetrated, since it was near 300 years after that Pompey brought them to Europe. From this time till the days of Heliogabalus, the rhinoceros was frequently exhibited in the Roman spectacles; and he has often been transported into Europe in more modern times; but they were long very ill represented, and very imperfectly described, till some that arrived in London in 1739 and 1741 were inspected, by which the errors and caprices of former writers were detected.

There are two species of rhinoceros, the first of which is the *unicornis*, the length of which, Buffon

tells us, from the extremity of the muzzle to the origin of the tail, is at least 12 feet, and the circumference of the body is nearly the same. "The rhinoceros which came to London in the year 1739 was sent from Bengal. Though not above two years of age, the expence of his food and journey amounted to near L. 1000 Sterling. He was fed with rice, sugar, and hay. He had daily seven pounds of rice, mixed with three pounds of sugar, and divided into three portions. He had likewise hay and green herbs, which last he preferred to hay. His drink was water, of which he took large quantities at a time (A). He was of a peaceable disposition, and allowed all parts of his body to be touched. When hungry, or struck by any person, he became mischievous, and in both cases nothing appeased him but food. When enraged, he sprung forward, and nimbly raised himself to a great height, pushing at the same time his head furiously against the walls, which he performed with amazing quickness, notwithstanding his heavy aspect and unwieldy mass. I often observed, says Dr Parsons, these movements produced by rage or impatience, especially in the mornings before his rice and sugar were brought to him. The vivacity and promptitude of his movements, Dr Parsons adds, led me to think, that he is altogether unconquerable, and that he could easily overtake any man who should offend him.

"This rhinoceros, at the age of two years, was not taller than a young cow that has never produced. But his body was very long and very thick. His head was disproportionally large. From the ears to the horn there is a concavity, the two extremities of which, namely, the upper end of the muzzle, and the part near the ears, are considerably raised. The horn, which was not yet above an inch high, was black, smooth at the top, but full of wrinkles directed backward at the base. The nostrils are situated very low, being not above an inch distant from the opening of the mouth. The under lip is pretty similar to that of the ox; but the upper lip has a greater resemblance to that of the horse, with this advantageous difference, that the rhinoceros can lengthen this lip, move it from side to side, roll it about a staff, and seize with it any object he wishes to carry to his mouth. The tongue of this young rhinoceros was soft, like that of a calf. His eyes had no vivacity: In figure they resembled those of the hog, and were situated lower, or nearer the nostrils, than in any other quadruped. His ears are large, thin at the extremities, and contracted at their origin by a kind of annular rugosity. The neck is very short, and surrounded with two large folds of skin. The shoulders are very thick, and at their juncture there is another fold of skin, which descends upon the fore legs. The body of this young rhinoceros was very thick, and pretty much resembled that of a cow about to bring forth. Between the body and crupper there is another fold, which descends upon the hind legs. Lastly, another fold transversely surrounds the inferior part of the crupper, at some distance from the tail. The belly was large, and hung near the ground, particularly its middle part. The legs are round, thick, strong, and

Rhinoceros.
Plate
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Buffon's
Natural
History,
vol. v. p.
92, &c.

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(A) "Their food in a state of nature is the grossest herbs, as thistles and thorny shrubs, which they prefer to the soft pasture of the best meadows; they are fond of the sugar cane, and eat all kinds of grain, but for flesh they have no appetite."

Rhinoceros. their joint bended backwards. This joint, which, when the animal lies, is covered with a remarkable fold of the skin, appears when he stands. The tail is thin, and proportionally short; that of the rhinoceros so often mentioned, exceeded not 16 or 17 inches in length. It turns a little thicker at the extremity, which is garnished with some short, thick, hard hairs. The form of the penis is very extraordinary. It is contained in a prepuce or sheath like that of the horse; and the first thing that appears in the time of erection is a second prepuce, of a flesh-colour, from which there issues a hollow tube, in the form of a funnel cut and bordered somewhat like a flower-de-luce, and constitutes the glans and extremity of the penis. This anomalous glans is of a paler flesh-colour than the second prepuce. In the most vigorous erection, the penis extends not above eight inches out of the body; and it is easily procured by rubbing the animal with a handful of straw when he lies at his ease. The direction of this organ is not straight, but bended backward. Hence he throws out his urine behind; and from this circumstance, it may be inferred that the male covers not the female, but that they unite with their cruppers to each other. The female organs are situated like those of the cow; and she exactly resembles the male in figure and grossness of body. The skin is so thick and impenetrable, that when a man lays hold of any of the folds, he would imagine he is touching a wooden plank of half an inch thick (B). When tanned, Dr Grew remarks, it is excessively hard, and thicker than the hide of any other terrestrial animal. It is everywhere covered more or less with incrustations in the form of galls or tuberosities, which are pretty small on the top of the neck and back, but become larger on the sides. The largest are on the shoulders and crupper, are still pretty large on the thighs and legs, upon which they are spread all round, and even on the feet. But between the folds the skin is penetrable, delicate, and as soft to the touch as silk, while the external part of the fold is equally hard with the rest. This tender skin between the folds is of a light flesh-colour; and the skin of the belly is nearly of the same colour and consistence. These galls or tuberosities should not be compared, as some authors have done, to scales. They are only simple indurations of the skin, without any regularity in their figure or symmetry in their respective positions. The flexibility of the skin in the folds enables the rhinoceros to move with facility his head, neck, and members. The whole body, except at the joints, is inflexible, and resembles a coat of mail. Dr Parsons remarks, that this animal listened with a deep and long continued attention to any kind of noise; and that, though he was sleeping, eating, or obeying any other pressing demands of nature, he raised his head, and listened till the noise ceased."

These animals never assemble or march together in troops like elephants. Being of a more solitary and savage disposition, they are more difficult to hunt and to overcome. They never attack men, however, except when they are provoked, when they are very furious and formidable; but as they see only before them, and

not very sharply, and as they turn with great difficulty, they may be easily avoided. The skin of these animals is so extremely hard as to resist sabres, lances, javelins, and even musket balls, the only penetrable parts being the belly, the eyes, and about the ears. Hence the hunters generally attack them when they lie down to sleep.— Their flesh is considered as excellent by the Indians and Africans, but especially by the Hottentots; and if they were trained when young, they might be rendered domestic, in which case they would multiply more easily than the elephant. They inhabit Bengal, Siam, Cochinchina, Quangsi in China, the isles of Java and Sumatra, Congo, Angola, Ethiopia, and the country as low as the Cape. They love shady forests, the neighbourhood of rivers, and marshy places. They wallow in the mire like hogs, and are said by that means to give shelter in the folds of their skins to scorpions, centipedes, and other insects. This is denied by Buffon and Edwards, though the surgeon of the Shaftesbury had observed in a rhinoceros, newly taken after having weltered in the mud, several insects concealed under the ply of the skin. This carries with it every appearance of probability; for as the creature welters in mud, it is impossible for it to do so without bringing up with it some of the insects which live in that mud; and when this is the case, it surely cannot be unnatural to suppose that they would shelter themselves under the plaits of the skin. Mr Bruce had an opportunity of examining the skin of a rhinoceros before his muddy covering had been scraped off, and saw under it several very large worms, but not of the carnivorous kind. He saw likewise several smaller animals resembling ear-wigs, which he took to be young scolopendræ; and, though he searched no farther, we must certainly consider this as a proof of what the surgeon of the Shaftesbury related. Mr Bruce supposes, too, that they welter in mire, partly in order to screen themselves by a case of mud from the attacks of that mischievous fly which infests the animals of Abyssinia to such a degree. "The time of the fly (says he) being in the rainy season, the whole black earth turns into mire. In the night, when the fly is at rest, the rhinoceros chooses a convenient place, and there, rolling himself in the mud, he clothes himself with a kind of case, which defends him against his enemy the following day. The wrinkles and plaits of his skin serve to keep this muddy plaster firm upon him, all but about his hips, shoulders, and legs, where it cracks and falls off by motion, and leaves him exposed in those places to the attacks of the fly. The itching and pain which follow occasion him to rub himself in those parts against the roughest trees; and this is at least one cause of the pustules or tubercles which we see upon these places, both on the elephant and rhinoceros." They bring forth only one young at a time, about which they are very solicitous. They are said to consort with tigers; a story founded merely on their common attachment to the sides of rivers, by which means they are often found near each other. Their skin, flesh, hoofs, teeth, and even dung, are used in India medicinally. The horn, especially that of a virgin rhinoceros, is considered as an antidote against poison. Every horn,

(B) This Mr Bruce denies to be the case, and suspects, where it does occur, that it is the effect of disease, or of a different habit acquired by keeping. In their natural state, he thinks they prevent this rigidity by wallowing in the mud.

Rhinoceros. horn, however, has not this property; some of them selling very cheap, while others are extremely dear.

Some writers are of opinion, that the rhinoceros is the unicorn of holy writ and of the ancients, and that the oryx or Indian ass of Aristotle, who says it has but one horn, was the same, his informers comparing the clumsy shape of the rhinoceros to that of the ass.—It was also the *bos unicornis* and *fera monoceros* of Pliny, both of which were of India; and in his account of the monoceros he exactly describes the great black horn and hog-like tail. The unicorn of Scripture is considered as having all the properties of the rhinoceros, as rage, untameableness, great swiftness, and vast strength. This opinion is most ably supported by Mr Bruce. “The derivation of the Hebrew word *reem* (says he), which in our version is translated *unicorn*, both in the Hebrew and the Ethiopic, seems to be from erectness, or standing straight. This is certainly no particular quality in the animal itself, who is not more or even so much erect as many other quadrupeds, for in its knees it is rather crooked; but it is from the circumstance and manner in which its horn is placed. The horns of all other animals are inclined to some degree of parallelism with his nose or os frontis. The horn of the rhinoceros is erect and perpendicular to this bone, on which it stands at right angles, thereby possessing a greater purchase or power, as a lever, than an horn could possibly have in any other position. The situation of the horn is very happily alluded to in Scripture; ‘My horn shalt thou exalt like the horn of an unicorn.’ And the horn here alluded to is not wholly figurative, but was really an ornament worn by great men in the days of victory, preferment, or rejoicing, when they were anointed with new, sweet, or fresh oil; a circumstance which David joins with that of erecting the horn.

“Some authors, for what reason I know not, have made the reem, or unicorn, to be of the deer or antelope kind; that is, of a genus whose very character is fear and weakness, directly opposite to the qualities by which the reem is described in Scripture: besides, it is plain that the reem is not of the class of clean quadrupeds; and a late modern traveller very whimsically takes him for the leviathan, which certainly was a fish. Balaam, a priest of Midian, and so in the neighbourhood of the haunts of the rhinoceros, and intimately connected with Ethiopia, (for they themselves were shepherds of that country), in a transport, from contemplating the strength of Israel, whom he was brought to curse, says, they had, as it were, the strength of the reem. Job makes frequent allusion to his great strength, ferocity, and indocility. He asks, ‘Will the reem be willing to serve thee, or abide by thy crib?’ that is, Will he willingly come into thy stable, and eat at thy manger? And again, ‘Canst thou bind the reem with a band in the furrow; and will he harrow the valleys for thee?’—In other words, Canst thou make him go to the plough or harrows?

“The rhinoceros, in Geez, is called *Arwe Harich*, and in the Amharic *Auraris*; both which names signify ‘the large wild beast with the horn.’ This would seem as if applied to the species with one horn. On the other hand, in the country of the Shangalla and in Nubia he

is called *Girnamgirn*, or ‘horn upon horn;’ and this would seem to denote that he had two. The Ethiopic text renders the word *reem*, ‘Arwe-Harich;’ and this the Septuagint translates *monoceros*, or *unicorn*. The principal reason of translating the word *unicorn* rather than *rhinoceros*, is from a prejudice that he must have had but one horn. But this is by no means so well founded as to be admitted the only argument for establishing the existence of an animal, which never has appeared after the search of so many ages. Scripture speaks of the horns of the unicorn; so that even from this circumstance the reem may be the rhinoceros, as the Asiatic, and part of the African rhinoceros, may be the unicorn.”

The rhinoceros bicornis was long known in Europe merely by the double horns which were preserved in various cabinets; and its existence, though now past all doubt, has been frequently questioned. Dr Sparman, in his voyage to the Cape of Good Hope, killed two of these animals, which he dissected, and very minutely describes. The horns, he says, in the live animal are so mobile and loose, that when it walks carelessly along, one may see them waggle about, and hear them clash and clatter against each other. In the Phil. Trans. for 1793, we have a description of the double-horned rhinoceros of Sumatra, by Mr Bell, surgeon in the service of the East India Company at Bencoolen; and this account, though it differs considerably from that of Sparman in some particulars, we shall insert here. “The animal (says Mr Bell) herein described was shot with a leaden ball from a musket about ten miles from Fort Marlborough. I saw it the day after; it was then not in the least putrid, and I put it into the position from which the accompanying drawing was made. (See Plate cccxxxviii.) It was a male; the height at the shoulder was 4 feet 4 inches; at the sacrum nearly the same; from the tip of the nose to the end of the tail eight feet five inches.—From the appearance of its teeth and bones it was but young, and probably not near its full size. The shape of the animal was much like that of the hog. The general colour was a brownish ash; under the belly, between the legs and folds of the skin, a dirty flesh colour. The head much resembled that of the single horned rhinoceros; the eyes were small, of a brown colour; the *membrana nictitans* thick and strong: the skin surrounding the eyes was wrinkled; the nostrils were wide; the upper lip was pointed, and hanging over the under.

“There were six *molars*, or grinders, on each side of the upper and lower jaw, becoming gradually larger backward, particularly in the upper; two teeth in the front of each jaw; the tongue was quite smooth; the ears were small and pointed, lined and edged with short black hair, and situated like those of the single-horned rhinoceros. The horns were black, the larger was placed immediately above the nose, pointing upwards, and was bent a little back; it was about nine inches long. The small horn was four inches long, of a pyramidal shape, flattened a little, and placed above the eyes, rather a little more forward, standing in a line with the larger horn, immediately above it. They were both firmly attached to the skull, nor was there any appearance of joint or muscles to move them (c). The neck was thick and short, the skin on the under side thrown in-

to

(c) Mr Bruce, however, says, that in the living animal the horns are extremely sensible. He informs us, that

Rhinoceros. to folds, and these folds again wrinkled. The body was bulky and round, and from the shoulder ran a line, or fold, as in the single-horned rhinoceros, though it was but faintly marked. There were several other folds and wrinkles on the body and legs; and the whole gave rather the appearance of softness: the legs were thick, short, and remarkably strong; the feet armed with three distinct hoofs, of a blackish colour, which surrounded half the foot, one in front, the others on each side.—The soles of the feet were convex, of a light colour, and the cuticle on them not thicker than that on the foot of a man who is used to walking; the testicles hardly appeared externally; the penis was bent backward, and opened about 18 inches below the anus. At its origin it was as thick as a man's leg, and about two feet and a half long; the bend in it occasions the urine to be discharged backwards. The glans is very singular; the opening of the urethra is like the mouth of a cup with its brim bending over a little and is about three quarters of an inch in diameter; the glans here is about half an inch in diameter, and continues that thickness for an inch and a half: it is then inserted into another cup like the first, but three times as large; the glans afterwards gradually becomes thicker, and at about nine inches from the opening of the urethra are placed two bodies on the upper part of the glans, very like the nipples of a milch-cow, and as large; these become turgid when the penis is erected; the whole of this is contained in the prepuce, and may be considered as glans. From the os pubis arises a strong muscle, which soon becomes tendinous: this tendon is continued along the back or upper part of the penis; it is flattened, is about the size of a man's little finger, and is inserted into the upper part of the glans, near the end. The use of this muscle is to straiten the penis. On the under side of the penis there are two muscles, antagonists to the above; they arise from the os ischium fleshy, run along the lower side of the penis, on each side of the corpus spongiosum, and are inserted fleshy into the lower side of the glans; the action of these muscles will draw in the penis, and bend it. The male has two nipples, like the female, situated between the hind legs; they are about half an inch in length, of a pyramidal form, rounded at the end.

"The whole skin of the animal is rough, and covered very thinly with short black hair. The skin was not more than one third of an inch in thickness at the strongest part; under the belly it was hardly a quarter of an inch; any part of it might be cut through with ease by a common dissecting knife. The animal had not that appearance of armour which is observed in the single-horned rhinoceros. Since I dissected the male, I have had an opportunity of examining a female, which was more of a lead colour: it was younger than the male, and had not so many folds or wrinkles in its skin; of course it had still less the appearance of armour. The only external mark which distinguishes it from the male is the vagina, which is close to the anus; whereas in the male the opening for the penis is 18 inches below the anus."

From the difference between this account and Spar-

man's, which in some particulars is considerable, and from the difference of shape, we are disposed to think them varieties. Mr Bruce's drawing of the rhinoceros bicornis is unquestionably a deception; the body of the animal, as there represented, corresponds exactly with that of the unicornis except in its having two horns on its head. In the museum of the late Dr William Hunter, the two-horned animal was preserved, agreeing exactly with the general accounts and figures we have of that animal, but differing essentially from Mr Bruce's. For further particulars respecting these curious animals, we refer to Buffon, vol. vi. p. 92–117; Sparman's Voyage to the Cape, vol. ii. chap. 12.; and Bruce's Travels, vol. iv. p. 296, &c. and Appendix, p. 85, &c.

RHINOCEROS-BIRD. See BUCEROS.

RHITYMNA. See RETIMO.

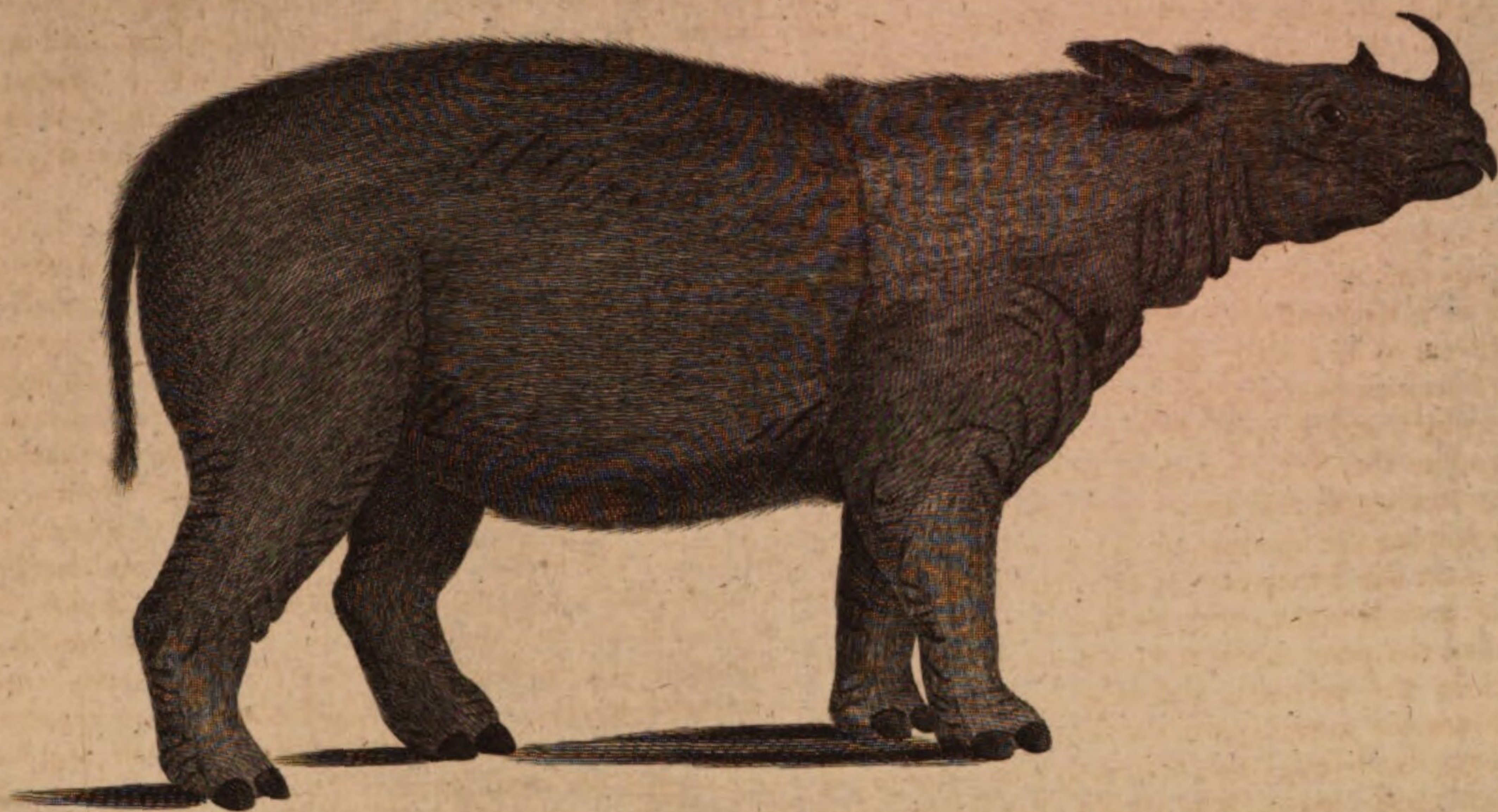
RHIZOBALUS, in botany: A genus of the tetragynia order, belonging to the polyandria class of plants; and in the natural method ranking under the 23d order, *Tribilata*. The calyx monophyllous, fleshy, and downy; the corolla consists of five petals, which are round, concave, fleshy, and much larger than the calyx; the stamina are very numerous, filiform, and longer than the corolla; the styli are four, filiform, and of the length of the stamina; the pericarpium has four drupæ, kidney-shaped, compressed with a fleshy substance inside, and in the middle a flat large nut containing a kidney shaped kernel. Of this there is only one species, viz. *Pekia*. The nut is sold in the shops as American nuts; they are flat, tuberculated, and kidney-shaped, containing a kernel of the same shape, which is sweet and agreeable. Clusius gives a good figure of the nut, and Aublet has one of the whole plant.

RHIZOPHORA, the MANGROVE, or *Mangle*, in botany: A genus of the monogynia order, belonging to the dodecandria class of plants; and in the natural method ranking under the 12th order, *Holoraceæ*. The calyx is quadripartite, the corolla partite; there is one seed, very long, and carnosus at the base. These plants are natives of the East and West Indies, and often grow 40 or 50 feet high. They grow only in water and on the banks of rivers, where the tide flows up twice a-day. They preserve the verdure of their leaves throughout the year. From the lowest branches issue long roots, which hang down to the water, and penetrate into the earth. In this position they resemble so many arcades, from five to ten feet high, which serve to support the body of the tree, and even to advance it daily into the bed of the water. These arcades are so closely intertwined one with another, that they form a kind of natural and transparent terrace, raised with such solidity over the water, that one might walk upon them, were it not that the branches are too much encumbered with leaves. The most natural way of propagating these trees, is to suffer the several slender small filaments which issue from the main branches to take root in the earth. The most common method, however, is that of laying the small lower branches in baskets of mould or earth till they have taken root.

The description just given pertains chiefly to a particular species of mangrove, termed by the West Indians

that once at a hunting match he saw the point of a rhinoceros's horn broken off by a musket-shot; the consequence of which was, that the creature was for a moment deprived of all appearance of life.

Rhinoceros Bicornis.



Unicornis.



Rhizo-
phora,
Rhodes.

dians *black mangles*, on account of the brown dusky colour of the wood. The bark is very brown, smooth, pliant when green, and generally used in the West India islands for tanning of leather. Below this bark lies a cuticle, or skin, which is lighter, thinner, and more tender. The wood is nearly of the same colour as the bark; hard, pliant, and very heavy. It is frequently used for fuel, for which purpose it is said to be remarkably proper: the fires which are made of this wood being both clearer, more ardent and durable than those made of any other materials whatever.—The wood is compact; almost incorruptible; never splinters; is easily worked; and were it not for its enormous weight, would be commodiously employed in almost all kinds of work, as it possesses every property of good timber. To the roots and branches of mangroves that are immersed in the water, oysters frequently attach themselves; so that wherever this curious plant is found growing on the sea-shore, oyster-fishing is very easy; as in such cases these shell-fish may be literally said to be gathered upon trees.

The red mangle or mangrove grows on the sea-shore, and at the mouth of large rivers; but does not advance, like the former, into the water. It generally rises to the height of 20 or 30 feet, with crooked, knotty branches, which proceed from all parts of the trunk. The bark is slender, of a brown colour, and, when young, is smooth, and adheres very closely to the wood; but when old, appears quite cracked, and is easily detached from it. Under this bark is a skin as thick as parchment, red, and adhering closely to the wood, from which it cannot be detached till the tree is felled and dry. The wood is hard, compact, heavy, of a deep red, with a very fine grain. The pith or heart of the wood being cut into small pieces, and boiled in water, imparts a very beautiful red to the liquid, which communicates the same colour to wool and linen. The great weight and hardness of the wood prevents it from being generally used. From the fruit of this tree, which, when ripe, is of a violet colour, and resembles some grapes in taste, is prepared an agreeable liquor, much esteemed by the inhabitants of the Caribbee islands.

White mangle, so termed from the colour of its wood, grow, like the two former, upon the banks of rivers, but is seldom found near the sea. The bark is grey; the wood, as we have said, white, and when green, supple; but dries as soon as cut down, and becomes very light and brittle. This species is generally called *rope-mangrove*, from the use to which the bark is applied by the inhabitants of the West Indies. This bark, which, by reason of the great abundance of sap, is easily detached when green from the wood, is beaten or bruised betwixt two stones, until the hard and woody part is totally separated from that which is soft and tender. This last, which is the true cortical substance, is twisted into ropes of all sizes, which are exceedingly strong, and not apt to rot in the water.

Ancient
names and
etymology.

RHODES, a celebrated island in the Archipelago, the largest and most easterly of the Cyclades, was known in ancient times by the names of *Asteria*, *Ophiussa*, *Æthraa*, *Trinacria*, *Corymbia*, *Poessa*, *Atabyria*, *Marcia*, *Oloessa*, *Stadia*, *Telchinis*, *Pelagia*, and *Rhodus*. In later ages, the name of *Rhodus*, or *Rhodes*, prevailed, from the Greek word *rhodon*, as is commonly sup-

posed, signifying a "rose;" the island abounding very much with these flowers. Others, however, give different etymologies, among which it is difficult to find one preferable to another. It is about 20 miles distant from the coasts of Lycia and Caria, and about 120 miles in compass.

Several ancient authors assert, that Rhodes was formerly covered by the sea, but gradually raised its head above the waves, and became an island. Delos and Rhodes (says Pliny), islands which have long been celebrated, sprung at first from the sea. The same fact is supported by such a variety of other evidence as render it indubitable. Philo† ascribes the event to the decrease of the waters of the ocean. If his conjecture be not without foundation, most of the isles of the Archipelago, being lower than Rhodes, must have had a similar origin. But it is much more probable that the volcanic fires, which in the fourth year of the 135th Olympiad, raised Therasia and Thera, known at present by the name of *Santorin*, from the depths of the sea, and have in our days thrown out several small islands adjacent, also produced in some ancient era Rhodes and Delos.

The first inhabitants of Rhodes, according to Diodorus Siculus, were called the *Telchines*, who came originally from the island of Crete. These, by their skill in astrology, perceiving that the island was soon to be drowned with water, left their habitations, and made room for the Heliades, or grandsons of Phœbus, who took possession of the island after that god had cleared it from the water and mud with which it was overwhelmed. These Heliades, it seems, excelled all other men in learning, and especially in astrology; invented navigation, &c. In after ages, however, being infested with great serpents which bred in the island, they had recourse to an oracle in Delos, which advised them to admit Phorbas, a Thessalian, with his followers, into Rhodes. This was accordingly done; and Phorbas having destroyed the serpents, was, after his death, honoured as a demigod. Afterwards a colony of Cretans settled in some part of the island, and a little before the Trojan war, Tlepolemus the son of Hercules, who was made king of the whole island, and governed with great justice and moderation.

After the Trojan war, all the ancient inhabitants were driven out by the Dorians, who continued to be masters of the island for many ages. The government was at first monarchical; but a little before the expedition of Xerxes into Greece, a republican form of government was introduced; during which the Rhodians applied themselves to navigation, and became very powerful by sea, planting several colonies in distant countries. In the time of the Peloponnesian war, the republic of Rhodes was rent into two factions, one of which favoured the Athenians, and another the Spartans; but at length the latter prevailing, democracy was abolished, and an aristocracy introduced. About 351 B. C. we find the Rhodians oppressed by Mausolus king of Caria, and at last reduced by Artemisia his widow. In this emergency, they applied to the Athenians; by whose assistance, probably, they regained their liberty.

From this time to that of Alexander the Great, the Rhodians enjoyed an uninterrupted tranquillity. To him they voluntarily submitted; and were on that account

Rhodes.

2 Its origin.

* Pliny, lib. 2. cap. 87.

† Philo de Mundo.

3 First inhabitants

4 Driven out by the Dorians.

5 Submit to Alexander, but revolted after his death.

⁶ **Rhodes.** count highly favoured by him: but no sooner did they hear of his death, than they drove out the Macedonian garrisons, and once more became a free people. About this time happened a dreadful inundation at Rhodes; which, being accompanied with violent storms of rain, and hailstones of an extraordinary bigness, beat down many houses, and killed great numbers of the inhabitants. As the city was built in the form of an amphitheatre, and no care had been taken to clear the pipes and conduits which conveyed the water into the sea, the lower parts of the city were in an instant laid under water, several houses quite covered, and the inhabitants drowned before they could get to the higher places. As the deluge increased, and the violent showers continued, some of the inhabitants made to their ships, and abandoned the place, while others miserably perished in the waters. But while the city was thus threatened with utter destruction, the wall on a sudden burst asunder, and the water discharging itself by a violent current into the sea, unexpectedly delivered the inhabitants from all danger.

⁶ Violent inundation at Rhodes.

⁷ Difference with Antigonus.

The Rhodians suffered greatly by this unexpected accident, but soon retrieved their losses by a close application to trade. During the wars which took place among the successors of Alexander, the Rhodians observed a strict neutrality; by which means they enriched themselves so much, that Rhodes became one of the most opulent states of that age; insomuch that, for the common good of Greece, they undertook the *piratic war*, and, at their own charge, cleared the seas of the pirates who had for many years infested the coasts of Europe and Asia. However, notwithstanding the neutrality they professed, as the most advantageous branches of their commerce were derived from Egypt, they were more attached to Ptolemy, king of that country, than to any of the neighbouring princes. When therefore Antigonus, having engaged in a war with Ptolemy about the island of Cyprus, demanded succours of them, they earnestly intreated him not to compel them to declare war against their ancient friend and ally. But this answer, prudent as it was, drew upon them the displeasure of Antigonus, who immediately ordered one of his admirals to sail with his fleet to Rhodes, and seize all the ships that came out of the harbour for Egypt. The Rhodians, finding their harbour blocked up by the fleet of Antigonus, equipped a good number of galleys, fell upon the enemy, and obliged him, with the loss of many ships, to quit his station. Hereupon Antigonus, charging them as aggressors, and beginners of an unjust war, threatened to besiege their city with the strength of his whole army. The Rhodians endeavoured by frequent embassies to appease his wrath; but all their remonstrances served rather to provoke than allay his resentment: and the only terms upon which he would hearken to any accommodation were, that the Rhodians should declare war against Ptolemy, that they should admit his fleet into their harbour, and that an hundred of the chief citizens should be delivered up to him as hostages for the performance of these articles. The Rhodians sent ambassadors to all their allies, and to Ptolemy in particular, imploring their assistance, and representing to the latter, that their attachment to his interest had drawn upon them the danger to which they were exposed. The preparations on both sides were immense. As Antigonus was near fourscore years of

age at that time, he committed the whole management of the war to his son Demetrius, who appeared before the city of Rhodes with 200 ships of war, 170 transports having on board 40,000 men, and 1000 other vessels laden with provisions and all sorts of warlike engines. As Rhodes had enjoyed for many years a profound tranquillity, and been free from all devastations, the expectation of booty, in the plunder of so wealthy a city, allured multitudes of pirates and mercenaries to join Demetrius in this expedition; insomuch that the whole sea between the continent and the island was covered with ships; which struck the Rhodians, who had a prospect of this mighty armada from the walls, with great terror and consternation.

Demetrius, having landed his troops without the reach of the enemy's machines, detached several small bodies to lay waste the country round the city, and cut down the trees and groves, employing the timber, and materials of the houses without the walls, to fortify his camp with strong ramparts and a treble palisade; which work, as many hands were employed, was finished in a few days. The Rhodians, on their part, prepared for a vigorous defence. Many great commanders, who had signalized themselves on other occasions, threw themselves into the city, being desirous to try their skill in military affairs against Demetrius, who was reputed one of the most experienced captains in the conduct of sieges that antiquity had produced. The besieged began with dismissing from the city all such persons as were useless; and then taking an account of those who were capable of bearing arms, they found that the citizens amounted to 6000, and the foreigners to 1000. Liberty was promised to all the slaves who should distinguish themselves by any glorious action, and the public engaged to pay the masters their full ransom. A proclamation was likewise made, declaring, that whoever died in defence of their country should be buried at the expence of the public; that his parents and children should be maintained out of the treasury; that fortunes should be given to his daughters; and his sons, when they were grown up, should be crowned and presented with a complete suit of armour at the great solemnity of Bacchus; which decree kindled an incredible ardour in all ranks of men.

Demetrius, having planted all his engines, began to batter with incredible fury the walls on the side of the harbour; but was for eight days successively repulsed by the besieged, who set fire to most of his warlike engines, and thereby obliged him to allow them some respite, which they made good use of in repairing the breaches, and building new walls where the old ones were either weak or low. When Demetrius had repaired his engines, he ordered a general assault to be made, and caused his troops to advance with loud shouts, thinking by this means to strike terror into the enemy. But the besieged were so far from being intimidated, that they repulsed the aggressors with great slaughter, and performed the most astonishing feats of bravery. Demetrius returned to the assault next day; but was in the same manner forced to retire, after having lost a great number of men, and some officers of distinction. He had seized, at his first landing, an eminence at a small distance from the city; and, having fortified this advantageous post, he caused several batteries to be erected there, with engines, which incessantly discharged against

⁸ Rhodes besieged by Demetrius.

⁹ The inhabitants prepared for a vigorous defence.

¹⁰ Engines of Demetrius burnt.

^{Rhodes.} against the walls stones of 150 pounds weight. The towers, being thus furiously battered night and day, began to totter, and several breaches were opened in the walls: but the Rhodians, unexpectedly falling out, drove the enemy from their post, overturned their machines, and made a most dreadful havock; infomuch that some of them retired on board their vessels, and were with much ado prevailed upon to come ashore again.

^{Several de-} Demetrius now ordered a scalade by sea and land at the same time; and so employed the besieged, that they were at a loss what place they should chiefly defend. The attack was carried on with the utmost fury on all sides, and the besieged defended themselves with the greatest intrepidity. Such of the enemy as advanced first were thrown down from the ladders, and miserably bruised. Several of the chief officers, having mounted the walls to encourage the soldiers by their example, were there either killed or taken prisoners. After the combat had lasted many hours, with great slaughter on both sides, Demetrius, notwithstanding all his valour, thought it necessary to retire, in order to repair his engines, and give his men some days rest.

Demetrius being sensible that he could not reduce the city till he was master of the port, after having refreshed his men, he returned with new vigour against the fortifications which defended the entry into the harbour. When he came within the cast of a dart, he caused a vast quantity of burning torches and firebrands to be thrown into the Rhodian ships, which were riding there; and at the same time galled, with dreadful showers of darts, arrows, and stones, such as offered to extinguish the flames. However, in spite of their utmost efforts, the Rhodians put a stop to the fire; and, having with great expedition manned three of their strongest ships, drove with such violence against the vessels on which the enemy's machines were planted, that they were shattered in pieces, and the engines dismounted and thrown into the sea. Excessus the Rhodian admiral, being encouraged by this success, attacked the enemy's fleet with his three ships, and sunk a great many vessels; but was himself at last taken prisoner: the other two vessels made their escape, and regained the port.

As unfortunate as this last attack had proved to Demetrius, he determined to undertake another; and, in order to succeed in his attempt, he ordered a machine of a new invention to be built, which was thrice the height and breadth of those he had lately lost. When the work was finished, he caused the engine to be placed near the port, which he was resolved, at all adventures, to force. But as it was upon the point of entering the harbour, a dreadful storm arising, drove it against the shore, with the vessels on which it had been reared. The besieged, who were attentive to improve all favourable conjunctures, while the tempest was still raging, made a sally against those who defended the eminence mentioned above; and, though repulsed several times, carried it at last, obliging the Demetrians, to the number of 400, to throw down their arms and submit. After this victory gained by the Rhodians, there arrived to their aid 150 Gnossians, and 500 men sent by Ptolemy from Egypt, most

of them being natives of Rhodes, who had served among the king's troops.

Demetrius being extremely mortified to see all his batteries against the harbour rendered ineffectual, resolved to employ them by land, in hopes of carrying the city by assault, or at least reducing it to the necessity of capitulating. With this view, having got together a vast quantity of timber and other materials, he framed the famous engine called *helepolis*, which was by many degrees larger than any that had ever been invented before. Its basis was square, each side being in length near 50 cubits, and made up of square pieces of timber, bound together with plates of iron. In the middle part he placed thick planks, about a cubit distance from each other; and on these the men were to stand who forced the engine forward. The whole was moved upon eight strong and large wheels, whose felloes were strengthened with strong iron plates. In order to facilitate and vary the movements of the *helepolis*, casters were placed under it, whereby it was turned in an instant to what side the workmen and engineers pleased. From each of the four angles a large pillar of wood was carried to about the height of 100 cubits, and inclining to each other; the whole machine consisting of nine stories, whose dimensions gradually lessened in the ascent. The first story was supported by 43 beams, and the last by no more than nine. Three sides of the machine were plated over with iron, to prevent its being damaged by the fire that might be thrown from the city. In the front of each story were windows of the same size and shape as the engines that were to be discharged from thence. To each window were shutters, to draw up for the defence of those who managed the machines, and to deaden the force of the stones thrown by the enemy, the shutters being covered with skins stuffed with wool. Every story was furnished with two large staircases, that whatever was necessary might be brought up by one, while others were going down by the other, and so every thing may be dispatched without tumult or confusion. This huge machine was moved forwards by 3000 of the strongest men of the whole army; but the art with which it was built greatly facilitated the motion. Demetrius caused likewise to be made several testudoes or pent-houses, to cover his men while they advanced to fill up the trenches and ditches; and invented a new sort of galleries, through which those who were employed at the siege might pass and repass at their pleasure, without the least danger. He employed all his seamen in levelling the ground over which the machines were to be brought up, to the space of four furlongs. The number of workmen who were employed on this occasion amounted to 30,000.

In the mean time, the Rhodians, observing these formidable preparations, were busy in raising a new wall within that which the enemy intended to batter with the *helepolis*. In order to accomplish this work, they pulled down the wall which surrounded the theatre, some neighbouring houses, and even some temples, after having solemnly promised to build more magnificent structures in honour of the gods, if the city were preserved. At the same time, they sent out nine of their best ships to seize such of the enemy's vessels as they could meet with, and thereby distress them for

E c

want

Rhodes. want of provisions. As these ships were commanded by their bravest sea-officers, they soon returned with an immense booty, and a great many prisoners. Among other vessels, they took a galley richly laden, on board of which they found a great variety of valuable furniture, and a royal robe, which Phila herself had wrought and sent as a present to her husband Demetrius, accompanied with a letter written with her own hand. The Rhodians sent the furniture, the royal robe, and even the letter, to Ptolemy; which exasperated Demetrius to a great degree.

14
Thewalls
undermined
without
success.

While Demetrius was preparing to attack the city, the Rhodians having assembled the people and magistrates to consult about the measures they should take, some proposed in the assembly the pulling down of the statues of Antigonus and his son Demetrius, which till then had been held in the utmost veneration. But this proposal was generally rejected with indignation, and their prudent conduct greatly allayed the wrath both of Antigonus and Demetrius. However, the latter continued to carry on the siege with the utmost vigour, thinking it would reflect no small dishonour on him were he obliged to quit the place without making himself master of it. He caused the walls to be secretly undermined: but, when they were ready to fall, a deserter very opportunely gave notice of the whole to the townsmen; who having, with all expedition, drawn a deep trench all along the wall, began to countermine, and, meeting the enemy under ground, obliged them to abandon the work. While both parties guarded the mines, one Athenagoras a Milesian, who had been sent to the assistance of the Rhodians by Ptolemy with a body of mercenaries, promised to betray the city to the Demetrians, and let them in thro' the mines in the night-time. But this was only in order to ensnare them; for Alexander, a noble Macedonian, whom Demetrius had sent with a choice body of troops to take possession of a post agreed on, no sooner appeared, but he was taken prisoner by the Rhodians, who were waiting for him under arms. — Athenagoras was crowned by the senate with a crown of gold, and presented with five talents of silver.

15
A general
assault to
no purpose.

Demetrius now gave over all thoughts of undermining the walls, and placed all his hopes of reducing the city in the battering-engines which he had contrived. Having therefore levelled the ground under the walls, he brought up his helepolis, with four testudoes on each side of it. Two other testudoes of an extraordinary size, bearing battering-rams, were likewise moved forwards by 1000 men. Each story of the helepolis was filled with all sorts of engines for discharging of stones, arrows, and darts. When all things were ready, Demetrius ordered the signal to be given; when his men, setting up a shout, assaulted the city on all sides both by sea and land. But, in the heat of the attack, when the walls were ready to fall by the repeated strokes of the battering-rams, ambassadors arrived from Cnidus, earnestly soliciting Demetrius to suspend all further hostilities, and at the same time giving him hopes that they should prevail upon the Rhodians to submit to an honourable capitulation. A suspension of arms was accordingly agreed on, and ambassadors sent from both sides. But the Rhodians refusing to capitulate on the conditions offered them, the attack was renewed with so much fury,

and the machines played off in so brisk a manner, that a large tower built with square stones, and the wall that flanked it, were battered down. The besieged, nevertheless, fought in the breach with so much courage and resolution, that the enemy, after various unsuccessful attempts, were forced to abandon the enterprise, and retire.

In this conjuncture, a fleet which Ptolemy had¹⁶ freighted with 300,000 measures of corn, and different kinds of pulse for the use of the Rhodians, arrived very seasonably in the port, notwithstanding the vigilance of the enemy's ships, which cruized on the coasts of the island to surprise them. A few days after came in safe two other fleets, one sent by Cassander, with 100,000 bushels of barley; the other by Lysimachus, with 400,000 bushels of corn and as many of barley. This seasonable and plentiful supply arriving when the city began to suffer for want of provisions, inspired the besieged with new courage, and raised their drooping spirits. Being thus animated, they formed a design of setting the enemy's engines on fire; and with this view ordered a body of men to sally out the night ensuing, about the second watch, with torches and firebrands, having first placed on the walls an incredible number of engines, to discharge stones, arrows, darts, and fire-balls, against those who should attempt to oppose their detachment. The Rhodian troops, pursuant to their orders, all on a sudden sallied out, and advancing, in spite of all opposition, to the batteries, set them on fire, while the engines from the walls played incessantly on those who endeavoured to extinguish the flames. The Demetrians on this occasion fell in great numbers, being incapable, in the darkness of the night, either to see the engines that continually discharged showers of stones and arrows upon them, or to join in one body and repulse the enemy. The conflagration was so great, that several plates of iron falling from the helepolis, that vast engine would have been entirely consumed, had not the troops that were stationed in it with all possible speed quenched the fire with water, before prepared, and ready in the apartments of the engine against such accidents. Demetrius, fearing lest all his machines should be consumed, called together, by sound of trumpet, those whose province it was to move them; and, by their help, brought them off before they were entirely destroyed. When it was day, he commanded all the darts and arrows that had been shot by the Rhodians to be carefully gathered, that he might from their number form some judgement of the number of machines in the city. Above 800 firebrands were found on the spot, and no fewer than 1500 darts, all discharged in a very small portion of the night. This struck the prince himself with no small terror; for he never imagined that they would have been able to bear the charges of such formidable preparations. However, after having caused the slain to be buried, and given directions for the curing of the wounded, he applied himself to the repairing of his machines, which had been dismantled and rendered quite unserviceable.

In the mean time, the besieged, improving the respite¹⁷ allowed them by the removal of the machines, built a third wall in the form of a crescent, which took in all that part that was most exposed to the enemy's batteries; and, besides, drew a deep trench behind the breach,

Rhodes. breach, to prevent the enemy from entering the city that way. At the same time, they detached a squadron of their best ships, under the command of Amyntas, who made over to the continent of Asia; and there meeting with some privateers who were commissioned by Demetrius, took both the ships and the men, among whom were Timocles the chief of the pirates, and several other officers of distinction belonging to the fleet of Demetrius. On their return, they fell in with several vessels laden with corn for the enemy's camp, which they likewise took, and brought into the port. These were soon followed by a numerous fleet of small vessels loaded with corn and provisions sent them by Ptolemy, together with 1500 men, commanded by Antigonus a Macedonian of great experience in military affairs.—Demetrius, in the mean time, having repaired his machines, brought them up anew to the walls: which he incessantly battered till he opened a great breach and threw down several towers. But when he came to the assault, the Rhodians, under the command of Aminias, defended themselves with such resolution and intrepidity, that he was in three successive attacks repulsed with great slaughter, and at last forced to retire. The Rhodians likewise, on this occasion, lost several officers; and amongst others, the brave Aminias their commander.

18
Demetrius makes a breach in the walls, but is still repulsed.

While the Rhodians were thus signaling themselves in the defence of their country, a second embassy arrived at the camp of Demetrius from Athens and the other cities of Greece, soliciting Demetrius to compose matters, and strike up a peace with the Rhodians. At the request of the ambassadors, who were in all above 50, a cessation of arms was agreed upon; but the terms offered by Demetrius being anew rejected by the Rhodians, the ambassadors returned home without being able to bring the contending parties to an agreement. Hostilities were therefore renewed; and Demetrius, whose imagination was fertile in expedients for succeeding in his projects, formed a detachment of 1500 of his best troops, under the conduct of Alcimus and Mancius, two officers of great resolution and experience, ordering them to enter the breach at midnight, and, forcing the entrenchment behind it, to possess themselves of the posts about the theatre, where it would be no difficult matter to maintain themselves against any efforts of the townsmen. In order to facilitate the execution of so important and dangerous an undertaking, and amuse the enemy with false attacks, he at the same time, upon a signal given, ordered the rest of the army to set up a shout, and attack the city on all sides both by sea and land. By this means he hoped that, the besieged being alarmed in all parts, his detachment might find an opportunity of forcing the entrenchments which covered the breach, and afterwards of seizing the advantageous post about the theatre. This feint had all the success the prince could expect; for the troops having set up a shout from all quarters, as if they were advancing to a general assault, the detachment commanded by Alcimus and Mancius entered the breach, and fell upon those who defended the ditch, and the wall that covered it, with such vigour, that, having slain the most part of them and put the rest in confusion, they advanced to the theatre, and seized on the post adjoining to it. This occasioned a general uproar in the city, as if it had been

19
His troops enter the breach;

already taken: but the commanding officers dispatched orders to the soldiers on the ramparts not to quit their posts, nor stir from their respective stations. Having thus secured the walls, they put themselves at the head of a chosen body of their own troops, and of those who were lately come from Egypt, and with these charged the enemy's detachment. But the darkness of the night prevented them from dislodging the enemy and regaining the advantageous posts they had seized. Day, however, no sooner appeared, than they renewed their attack with wonderful bravery. The Demetrians without the walls, with loud shouts endeavoured to animate those who had entered the place, and inspire them with resolution to maintain their ground till they were relieved with fresh troops. The Rhodians being sensible that their fortunes, liberties, and all that was dear to them in the world, lay at stake, fought like men in the utmost despair, the enemy defending their posts for several hours without giving ground in the least. At length the Rhodians, encouraging each other to exert themselves in defence of their country, and animated by the example of their leaders, made a last effort, and, breaking into the very heart of the enemy's battalion, there killed both their commanders. After their death the rest were easily put in disorder, and all to a man either killed or taken prisoners. The Rhodians likewise on this occasion lost many of their best commanders; and among the rest Damotetis, their chief magistrate, a man of extraordinary valour, who had signalized himself during the whole time of the siege.

Rhodes.

Demetrius, not at all discouraged by this check, was making the necessary preparations for a new assault, when he received letters from his father Antigonus, enjoining him to conclude a peace with the Rhodians upon the best terms he could get, lest he should lose his whole army in the siege of a single town. From this time Demetrius wanted only some plausible pretence for breaking up the siege. The Rhodians likewise were now more inclined to come to an agreement than formerly; Ptolemy having acquainted them that he intended to send a great quantity of corn, and 3000 men to their assistance, but that he would first have them try whether they could make up matters with Demetrius upon reasonable terms. At the same time ambassadors arrived from the Ætolian republic, soliciting the contending parties to put an end to a war which might involve all the east in endless calamities.

20
But are all killed or taken.

An accident which happened to Demetrius in this conjuncture, did not a little contribute towards the wished-for pacification. This prince was preparing to advance his helepolis against the city, when a Rhodian engineer found means to render it quite useless. He undermined the tract of ground over which the helepolis was to pass the next day in order to approach the walls. Demetrius, not suspecting any stratagem of this nature, caused the engine to be moved forward, which coming to the place that was undermined, sunk so deep into the ground that it was impossible to draw it out again. This misfortune, if we believe Vegetius and Vitruvius, determined Demetrius to hearken to the Ætolian ambassadors, and at last to strike up a peace upon the following conditions: That the republic of Rhodes should be maintained in the full enjoyment of their ancient rights, privileges, and liberties, without any foreign garrison; that they should renew their ancient alliance

21
The helepolis rendered useless.

22
The siege raised.

Rhodes. with Antigonus, and assist him in his wars against all states and princes except Ptolemy king of Egypt; and that, for the effectual performance of the articles stipulated between them, they should deliver 100 hostages, such as Demetrius should make choice of, except those who bore any public employment.

Thus was the siege raised, after it had continued a whole year; and the Rhodians amply rewarded all those who had distinguished themselves in the service of their country. They also set up statues to Ptolemy, Cassander, and Lyfimachus; to all of whom they paid the highest honours, especially to the first, whom they worshipped as a god. Demetrius at his departure presented them with the hecopolis, and all the other machines which he had employed in battering the city; from the sale of which, with some additional sums of their own, they erected the famous colossus. After this they applied themselves entirely to trade and navigation; by which means they became quite masters of the sea, and much more opulent than any of the neighbouring nations. As far as lay in their power, they endeavoured to preserve a neutrality with regard to the jarring nations of the east. However, they could not avoid a war with the Byzantines, the occasion of which was as follows: The Byzantines being obliged to pay a yearly tribute of 80 talents to the Gauls, in order to raise this sum, they came to a resolution of laying a toll on all ships that traded to the Pontic sea. This resolution provoked the Rhodians, who were a trading nation, above all the rest. For this reason they immediately dispatched ambassadors to the Byzantines, complaining of the new tax; but as the Byzantines had no other method of satisfying the Gauls, they persisted in their resolution. The Rhodians now declared war, and prevailed upon Prusias king of Bithynia, and Attalus king of Pergamus, to assist them; by which confederacy the Byzantines were so intimidated, that they agreed to exact no toll from ships trading to the Pontic sea, the demand which had been the occasion of the war.

²⁴
A dreadful
earthquake
at Rhodes.

About this time happened a dreadful earthquake, which threw down the colossus, the arsenal, and great part of the city-walls of Rhodes; which calamity the Rhodians improved to their advantage, sending ambassadors to all the Grecian princes and states, to whom their losses were so much exaggerated, that their countrymen obtained immense sums of money under pretence of repairing them. Hiero king of Syracuse presented them with 100 talents; and, besides, exempted from all tolls and duties such as traded to Rhodes. Ptolemy king of Egypt gave them 100 talents, a million of measures of wheat, materials for building 20 quinqueremes and the like number of triremes; and, besides, sent them 100 architects, 300 workmen, and materials for repairing their public buildings, to a great value, paying them moreover 14 talents a-year for the maintenance of the workmen whom he sent them. Antigonus gave them 100 talents of silver, with 10,000 pieces of timber, each piece being 16 cubits long; 7000 planks; 3000 pounds of iron, as many of pitch and resin, and 1000 measures of tar. Chryseis, a woman of distinction, sent them 100,000 measures of wheat, and 3000 pounds of lead. Antiochus exempted from all taxes and duties the Rhodian ships trading to his dominions; presented them with 10 galleys, and 200,000

measures of corn, with many other things of great value. Prusias, Mithridates, and all the princes then reigning in Asia, made them proportionable presents: in short, all the Greek towns and nations, all the princes of Europe and Asia, contributed, according to their ability, to the relief of the Rhodians on that occasion; insomuch that their city not only soon rose from its ruins, but attained to an higher pitch of splendor than ever.

In the year 203 B. C. the Rhodians engaged in a war with Philip of Macedon. This monarch had invaded the territories of Attalus king of Pergamus; and because the Rhodians seemed to favour their ancient friend, sent one Heraclides, by birth a Tarentine, to set fire to their fleet; at the same time that he dispatched ambassadors into Crete, in order to stir up the Cretans against the Rhodians, and prevent them from sending any assistance to Attalus. Upon this war was immediately proclaimed. Philip at first gained an considerable advantage in a naval engagement; but the next year was defeated with the loss of 11,000 men, while the Rhodians lost but 60 men and Attalus 70. After this he carefully avoided coming to an engagement at sea either with Attalus or the Rhodians. The combined fleet, in the mean time, sailed towards the island of Ægina in hopes of intercepting him: but having failed in their purpose, they sailed to Athens, where they concluded a treaty with that people; and, on their return, drew all the Cyclades into a confederacy against Philip. But while the allies were thus wasting their time in negotiations, Philip, having divided his forces into two bodies, sent one, under the command of Philocles, to ravage the Athenian territories; and put the other aboard his fleet, with orders to sail to Meronea, a city on the north side of Thrace. He then marched towards that city himself with a body of forces, took it by assault, and reduced a great many others; so that the confederates would, in all probability, have had little reason to boast of their success, had not the Romans come to their assistance, by whose help the war was soon terminated to their advantage. In the war which took place between the Romans and Antiochus the Great king of Syria, the Rhodians were very useful allies to the former. The best part of their fleet was indeed destroyed by a treacherous contrivance of Polyxeniades the Syrian admiral; but they soon fitted out another, and defeated a Syrian squadron commanded by the celebrated Hannibal, the Carthaginian commander; after which, in conjunction with the Romans, they utterly defeated the whole Syrian fleet commanded by Polyxeniades; which, together with the loss of the battle of Magnesia, so dispirited Antiochus, that he submitted to whatever conditions the Romans pleased.

For these services the Rhodians were rewarded with the provinces of Lycia and Caria; but tyrannizing over the people in a terrible manner, the Lycians applied to the Romans for protection. This was readily granted; but the Rhodians were so much displeased with their interfering in this matter, that they secretly favoured Perseus in the war which broke out between him and the Roman republic. For this offence the two provinces above-mentioned were taken from them; but the Rhodians, having banished or put death those who had favoured Perseus, were again admitted into favour,

Rhodes. ²⁵ War with Philip of Macedon. ²⁶ The Rhodians assisted by the Romans.

Rhodes.

27
Rhodes be-
sieged by
Mithri-
dates with
out success.

your, and greatly honoured by the senate. In the Mithridatic war, their alliance with Rome brought upon them the king of Pontus with all his force; but having lost the greatest part of his fleet before the city, he was obliged to raise the siege without performing any remarkable exploit. In the war which Pompey made on the Cilician pirates, the Rhodians assisted him with all their naval force, and had a great share in the victories which he gained. In the civil war between Cæsar and Pompey, they assisted the latter with a very numerous fleet. After his death they sided with Cæsar; which drew upon them the resentment of C. Cassius, who advanced to the island of Rhodes with a powerful fleet, after having reduced the greatest part of the continent. The Rhodians, terrified at his approach, sent ambassadors intreating him to make up matters in an amicable manner, and promising to stand neuter, and recal the ships which they had sent to the assistance of the triumviri. Cassius insisted upon their delivering up their fleet to him, and putting him in possession both of their harbour and city. This demand the Rhodians would by no means comply with, and therefore began to put themselves in a condition to stand a siege; but first sent Archelaus, who had taught Cassius the Greek tongue while he studied at Rhodes, to intercede with his disciple in their behalf. Archelaus could not, with all his authority, prevail upon him to moderate his demands; wherefore the Rhodians, having created one Alexander, a bold and enterprising man, their prætor or prytanis, equipped a fleet of 33 sail, and sent it out under the command of Mnaseus, an experienced sea-officer, to offer Cassius battle. Both fleets fought with incredible bravery, and the victory was long doubtful: but the Rhodians, being at length overpowered by numbers, were forced to return with their fleet to Rhodes; two of their ships being sunk, and the rest very much damaged by the heavy ships of the Romans. This was the first time, as our author observes, that the Rhodians were fairly overcome in a sea-fight.

28
The Rhodians de-
feated in
two naval en-
gage-
ments by
Cassius.

Cassius, who had beheld this fight from a neighbouring hill, having refitted his fleet, which had been no less damaged than that of the Rhodians, repaired to Loryma, a stronghold on the continent belonging to the Rhodians. This castle he took by assault; and from hence conveyed his land-forces, under the conduct of Fannius and Lentulus, over into the island. His fleet consisted of 80 ships of war and above 200 transports. The Rhodians no sooner saw this mighty fleet appear, but they went out again to meet the enemy. The second engagement was far more bloody than the first; many ships were sunk, and great numbers of men killed on both sides. But victory anew declared for the Romans; who immediately blocked up the city of Rhodes both by sea and land. As the Rhodians had not had time to furnish the city with sufficient store of provisions, some of the inhabitants, fearing that if it were taken either by assault or by famine, Cassius would put all the inhabitants to the sword, as Brutus had lately done at Xanthus, privately opened the gate to him, and put him in possession of the town, which he nevertheless treated as if it had been taken by assault. He commanded 50 of the chief citizens, who were suspected to favour the adverse party, to be brought before him, and sentenced them all to die; others, to the number of 25, who had commanded the fleet or army

29
Who takes
and cruelly
pillages the
city.

because they did not appear when summoned, he proscribed. Having thus punished such as had either acted or spoken against him or his party, he commanded the Rhodians to deliver up to him all their ships, and whatever money they had in the public treasury. He then plundered the temples; stripping them of all their valuable furniture, vessels, and statues. He is said not to have left one statue in the whole city, except that of the sun; bragging, at his departure, that he had stripped the Rhodians of all they had, leaving them nothing but the sun. As to private persons, he commanded them, under severe penalties, to bring to him all the gold and silver they had, promising, by a public crier, a tenth part to such as should discover any hidden treasures. The Rhodians at first concealed some part of their wealth, imagining that Cassius intended by this proclamation only to terrify them; but when they found he was in earnest, and saw several wealthy citizens put to death for concealing only a small portion of their riches, they desired that the time prefixed for the bringing in their gold and silver might be prolonged. Cassius willingly granted them their request; and then through fear they dug up what they had hid under ground, and laid at his feet all they were worth in the world. By this means he extorted from private persons above 8000 talents. He then fined the city 500 more; and leaving L. Varus there with a strong garrison to exact the fine without any abatement, he returned to the continent.

After the death of Cassius, Marc Antony restored the Rhodians to their ancient rights and privileges; bestowing upon them the islands of Andros, Naxos, Tenos, and the city of Myndus. But these the Rhodians so oppressed and loaded with taxes, that the same Antony, though a great friend to the Rhodian republic, was obliged to divest her of the sovereignty over those places, which he had a little before so liberally bestowed upon her. From this time to the reign of the Emperor Claudius we find no mention made of the Rhodians. That prince, as Dion informs us, deprived them of their liberty for having crucified some Roman citizens. However, he soon restored them to their former condition, as we read in Suetonius and Tacitus. The latter adds, that they had been as often deprived of, as restored to, their liberty, by way of punishment or reward for their different behaviour, as they had obliged the Romans with their assistance in foreign wars, or provoked them with their seditions at home. Pliny, who wrote in the beginning of Vespasian's reign, styles Rhodes a *beautiful and free town*. But this liberty they did not long enjoy, the island being soon after reduced by the same Vespasian to a Roman province, and obliged to pay a yearly tribute to their new masters. This province was called the *province of the islands*. The Roman prætor who governed it resided at Rhodes, as the chief city under his jurisdiction; and Rome, notwithstanding the eminent services rendered her by this republic, thenceforth treated the Rhodians not as allies, but vassals.

Rhodes.

30
Rhodes re-
duced to a
Roman
province by
Vespasian.

The island of Rhodes continued subject to the Romans till the reign of the emperor Andronicus; when Villaret, grand-master of the knights of Jerusalem, then residing in Cyprus, finding himself much exposed to the attacks of the Saracens in that island, resolved to exchange it for that of Rhodes. This island too was almost

31
Expedi-
tions of
Villaret
grand-mas-
ter of the
knights of
Jerusalem
against
Rhodes.

³² **Rhodes.** almost entirely occupied by the Saracens; Andronicus the eastern emperor possessing little more in it than a castle. Nevertheless he refused to grant the investiture of the island to Villaret. The latter, without spending time in fruitless negotiations, sailed directly for Rhodes, where he landed his troops, provisions, and warlike stores, in spite of the opposition made by the Saracens, who then united against the common enemy. As Villaret foresaw that the capital must be taken before he could reduce the island, he instantly laid siege to it. The inhabitants defended themselves obstinately, upon which the grand-master thought proper to turn the siege into a blockade; but he soon found himself so closely surrounded by the Greeks and Saracens, that he could get no supply either of forage or provisions for his army. But having at length obtained a supply of provisions by means of large sums borrowed of the Florentines, he came out of his trenches and attacked the Saracens, with a full resolution either to conquer or die. A bloody fight ensued, in which a great number of the bravest knights were killed: but at length the Saracens gave way, and fled to their ships; upon which the city was immediately assaulted and taken. The Greeks and other Christians had their lives and liberties given them, but the Saracens were all cut to pieces. The reduction of the capital was followed by that of all the other places of inferior strength throughout the island; and in four years after their landing, the whole was subjugated, and the conquerors took the title of the *Knights of Rhodes*. For many years those knights continued the terror of the Saracens and Turks, and sustained a severe siege from Mohammed II. who was compelled to abandon the enterprise; but at length the Turkish sultan Solyman resolved at all events to drive them from it. Before he undertook the expedition, he sent a message commanding them to depart the island without delay; in which case he promised that neither they nor the inhabitants should suffer any injury, but threatened them with his utmost vengeance if they refused his offer. The knights, however, proving obstinate, Solyman attacked the city with a fleet of 400 sail and an army of 140,000 men.

³³ **The city besieged by Solyman.** The trenches were soon brought close to the counterescarp, and a strong battery raised against the town; which, however, did but little damage, till the sultan being informed by a spy of this particular, and that he was in danger of receiving some fatal shot from the tower of St John which overlooked his camp, he planted a battery against that tower, and quickly brought it down. Solyman, however, finding the whole place in some measure covered with strong fortifications of such height as to command all his batteries, ordered an immense quantity of stones and earth to be brought; in which so great a number of hands were employed night and day by turns, that they quickly raised a couple of hillocks high enough to overtop the city-walls. They plied them accordingly with such a continual fire, that the grand-master was obliged to cause them to be strongly propped within with earth and timber. All this while the besieged, who, from the top of the grand-master's palace, could discover how their batteries were planted, demolished them with their cannon almost as fast as they raised them.

Here the enemy thought proper to alter their measures, and to plant a strong battery against the tower of

St Nicholas, which, in the former siege by Mohammed, ³⁴ **Rhodes.** had resisted all the efforts of the then grand-vizier. This the bashaw of Romania caused to be battered with 12 large pieces of brass cannon, but had the mortification to see them all dismounted by those of the tower; to prevent which in future, he ordered them to be fired only in the night, and in the day had them covered with gabions and earth. This had such success, that, after 500 cannon-shot, the wall began to shake and tumble into the ditch; but he was surprised to find another wall behind it, well terraced, and bordered with artillery, and himself obliged either to begin afresh or give up the enterprise: and yet this last was what Solyman preferred, when he was told of its being built on a hard rock, incapable of being fapped, and how firmly it had held out against all the efforts of Mohammed's vizier. The next attack was therefore ordered by him to be made against the bastions of the town, and that with a vast number of the largest artillery, which continued firing during a whole month; so that the new wall of the bastion of England was quite demolished, though the old one stood proof against all their shot. That of Italy, which was battered by 17 large pieces of cannon, was still worse damaged; upon which Martinengo the engineer advised the grand-master to cause a sally to be made on the trenches of the enemy out of the breach, whilst he was making fresh entrenchments behind it. His advice succeeded; and the 200 men that sallied out sword in hand having surprised the Turks in the trench, cut most of them in pieces. At the same time a new detachment, which was sent to repulse them, being obliged, as that engineer rightly judged, to pass by a spot which lay open to their artillery, were likewise mostly destroyed by the continual fire that came from it, whilst the assailants were employed in filling up several fathoms of the trench before they retired. By that time the breach had been repaired with such new works, that all the efforts to mount it by assault proved equally ineffectual and destructive.

Unfortunately for the besieged, the continual fire ³⁵ **The besieged want powder, but find means to supply the defect.** they had made caused such a consumption of their powder, that they began to feel the want of it; the perfidious d'Amarald, whose province it had been to visit the magazines of it, having amused the council with a false report, that there was more than sufficient to maintain the siege, though it should last a whole twelve-month. But here the grand-master found means to supply in some measure that unexpected defect, by the cautious provision he had made of a large quantity of saltpetre, which was immediately ground and made into gunpowder, though he was at the same time obliged to order the engineers to be more sparing of it for the future, and to make use of it only in the defence of such breaches as the enemy should make.

All this while the Turks had not gained an inch of ground; and the breaches they had made were so suddenly either repaired or defended by new entrenchments, that the very rubbish of them must be mounted by assault. Solyman, therefore, thought it now advisable to set his numerous pioneers at work, in five different parts, in digging of mines, each of which led to the bastion opposite to it. Some of these were countermined by a new invented method of Martinengo; who, by the help of braced skins, or drums, could discover where ³⁶ **Desperate encounters in mines, &c.**

Rhodes. where the miners were at work. Some of these he perceived, which he caused to be opened, and the miners to be driven out by hand grenades; others to be smothered, or burned, by setting fire to gunpowder. Yet did not this hinder two considerable ones to be sprung, which did a vast deal of damage to the bastion of England, by throwing down about six fathoms of the wall, and filling up the ditch with its rubbish: whereupon the Turks immediately climbed up sword in hand to the top of it, and planted seven of their standards upon the parapet; but being stopped by a traverse, the knights, recovering from their surprise, fell upon them with such fury, that they were obliged to abandon it with great loss. The grand-master, who was then at church, quickly came to the place with his short pike in his hand, attended by his knights, encouraging all he met with, burghers, soldiers, and others, to fight bravely in defence of their religion and country, and arrived time enough to assist in the taking down their standards, and driving down the enemy by the way they came up. In vain did the vizier Mustapha endeavour to prevent their flight by killing some of the foremost with his sword, and driving the rest back; they were obliged to abandon the bastion, and, which was still worse, met with that death in their flight, which they had strove to shun from the fire-arms which were discharged upon them from the ramparts. Three sangiacs lost their lives in this attack, besides some thousands of the Turks; the grand-master, on his side, lost some of his bravest knights, particularly his standard-bearer.

The attacks were almost daily renewed with the same ill success and loss of men, every general striving to signalize himself in the fight of their emperor. At length the old general Peri, or Pyrrus, having harassed the troops which guarded the bastion of Italy for several days successively without intermission, caused a strong detachment, which he had kept concealed behind a cavalier, to mount the place by break of day, on the 13th of September; where, finding them overcome with sleep and fatigue, they cut the throats of the sentinels, and, sliding through the breach, were just going to fall upon them. The Italians, however, quickly recovered themselves and their arms, and gave them an obstinate repulse. The contest was fierce and bloody on both sides; and the bashaw, still supplying his own with new reinforcements, would hardly have failed of overpowering the other, had not the grand-master, whom the alarm had quickly reached, timely intervened, and, by his presence, as well as example, revived his Rhodians, and thrown a sudden panic among the enemy. Pyrrus, desirous to do something to wipe off the disgrace of this repulse, tried his fortune next on an adjoining work, lately raised by the grand-master Caretti: but here his soldiers met with a still worse treatment, being almost overwhelmed with the hand-grenades, melted pitch, and boiling oil, which came pouring upon them, whilst the forces which were on the adjacent flanks made as great a slaughter of those that fled; insomuch that the janissaries began to resume their old murmuring tone, and cry out that they were brought thither only to be slaughtered.

The grand vizier Mustapha, afraid lest their complaints should reach his master, agreed at length, as the last resort, to make a fresh attempt on the bastion

of England, whilst, to cause a diversion, the bashaw Ahmed sprung some fresh mines at an opposite part of the city. This was accordingly executed on the 17th of September; when the former, at the head of five battalions, resolutely mounted or rather crept up the breach, and, in spite of the fire of the English, advanced so far as to pitch some standards on the top; when, on a sudden, a crowd of English knights, commanded by one Bouk, or Burk, sallied out of their entrenchments, and, assisted by some other officers of distinction, obliged them to retire, though in good order. Mustapha, provoked at it, led them back, and killed several knights with his own hand; and had his men supported him as they ought, the place must have been yielded to him: but the fire which was made from the adjacent batteries and musketry disconcerted them to such a degree, that neither threats nor entreaties could prevent their abandoning the enterprise, and dragging him away with them by main force. The Rhodians lost in that action several brave knights, both English and German; and, in particular, John Burk, their valiant commander: but the Turks lost above 3000 men, besides many officers of distinction. Much the same ill success having attended Ahmed with his mines, one of which had been opened, and the other only bringing some fathoms of the wall down, he was also obliged to retreat; his troops, though some of the very best, being forced to disperse themselves, after having borne the fire and fury of the Spanish and Auvergnian knights as long as they were able.

By this time Solymán, ashamed and exasperated at his ill success, called a general council; in which he made some stinging reflections on his vizier, for having represented the reduction of Rhodes as a very easy enterprise. To avoid the effects of the sultan's resentment, the subtle Mustapha declared, that hitherto they had fought the enemy as it were upon equal terms, as if they had been afraid of taking an ungenerous advantage of their superiority, by which, said he, we have given them an opportunity of opposing us with their united force wherever we attacked them. But let us now resolve upon a general assault on several sides of the town; and see what a poor defence their strength, thus divided, will be able to make against our united force. The advice was immediately approved by all, and the time appointed for the execution of it was on the 24th of that month, and every thing was ordered to be got ready against that day. Accordingly the town was actually assaulted at four different parts, after having suffered a continual fire for some time from their artillery in order to widen the breaches; by which the grand-master easily understood their design, and that the bastions of England and Spain, the post of Provence, and terrace of Italy, were pitched upon for the assault, and took his precautions accordingly.

The morning was no sooner come, than each party mounted their respective breach with an undaunted bravery, the young sultan, to animate them the more, having ordered his throne to be reared on an eminence, whence he could see all that was done. The Rhodians, on the other hand, were no less diligent in repulsing them with their cannon and other fire-arms, with their melted lead, boiling oil, stink-pots, and other usual expedients. The one side ascend the scaling ladders, fearless of all that opposed them; the other overturn their

Rhodes.

37
An assault
in four dif-
ferent
places at
once.

Rhodes. their ladders and send them tumbling down headlong into the ditches, where they were overwhelmed with stones, or dispatched with darts and other missile weapons. The bastion of England proves the scene of the greatest slaughter and bloodshed; and the grand-master makes that his post of honour, and, by his presence and example, inspires his men with fresh vigour and bravery, whilst the continual thunder of his artillery makes such horrid work among the assailants as chills all their courage, and forces them to give way: the lieutenant-general, who commands the attack, leads them back with fresh vigour, and mounts the breach at the head of all; immediately after comes a cannon-ball from the Spanish bastion, which overturns him dead into the ditch. This disaster, instead of fear and dread, fills them with a furious desire of revenging his death: but all their obstinacy cannot make the Rhodians go one step back, whilst the priests, monks, young men and old, and even women of every rank and age, assist them with an uncommon ardour and firmness; some in overwhelming the enemy with stones; others in destroying them with melted lead, sulphur, and other combustibles; and a third sort in supplying the combatants with bread, wine, and other refreshments.

The assault was no less desperate and bloody on the bastion of Spain, where the knights, who guarded it, not expecting to be so soon attacked, and ashamed to stand idle, were assisting the bastion of Italy; which gave the Turks an opportunity to mount the breach, and penetrate as far as their intrenchments, where they planted no less than 30 of their standards on them. The grand-master was quickly apprised of it, and ordered the bastion of Auvergne to play against them; which was done with such diligence, and such continual fire, whilst the Rhodians enter the bastion by the help of their casemates, and, sword in hand, fall upon them with equal fury, that the Turks, alike beset by the fire of the artillery and the arms of the Rhodian knights, were forced to abandon the place with a considerable loss. The aga with great bravery rallies them afresh, and brings them back, by which time the grand-master likewise appeared. The fight was renewed with greater fierceness; and such slaughter was made on both sides, that the grand-master was obliged to draw 200 men out of St Nicholas tower to his assistance: these were commanded by some Roman knights, who led them on with such speed and bravery, that their very appearance on the bastion made the janissaries draw back; which Solyman observing from his eminence, caused a retreat to be sounded, to conceal the disgrace of their flight. In these attacks there fell about 15,000 of his best troops, besides several officers of distinction. The loss of the besieged was no less considerable, if we judge from the small number of their forces; but the greatest of all to them was that of some of their bravest and most distinguished knights and commanders, many of whom were killed, and scarce any escaped unwounded. But the most dreadful fate of all had like to have fallen on the favourite vizier Mustapha, who had proposed this general assault: the ill success of which had so enraged the proud sultan, that he condemned him to be shot with arrows at the head of his army; which dreadful sentence was just ready to be executed, when the old bashaw, by his intreaties, obtained a suspension

Rhodes. of it, in hopes that, when his fury was abated, he should also obtain his pardon.

Solyman, however, was so discouraged by his ill success, that he was on the point of raising the siege, and would have actually done so, had he not been diverted from it by the advice which he received from an Albanian deserter, some say by a letter from the traitor d'Amarald, that the far greater part of the knights were either killed or wounded, and those that remained altogether incapable of sustaining a fresh assault. This having determined him to try his fortune once more, the command of his forces was turned over to the bashaw Achmed; and, to show that he designed not to stir till he was master of the place, he ordered a house to be built on the adjacent mount Philermo for his winter-quarters. Achmed marched directly against the bastion of Spain, which had suffered the most; where, before he could open the trenches, his men fell thick and threefold by the constant fire both of small and great guns from the bastion of Auvergne. He lost still a much greater number in rearing a rampart of earth to cover the attack, and give him an opportunity of sapping the wall; and, as soon as he saw a large piece fall, ordered his men to mount the breach. They were no sooner come to the top, than they found a new work and entrenchments which Martinengo had reared; and there they were welcomed with such a brisk fire from the artillery, that they were glad to recover their trenches with the utmost precipitation, after having lost the much greater part of their men. The attack was renewed, and a reciprocal fire continued with great obstinacy, till a musket-shot deprived that indefatigable engineer of one of his eyes, and the order of his assiduous services for some time. The grand-master, having ordered him to be carried to his palace, took his place, and kept it till he was quite cured, which was not till 34 days after; and continued all the time in the intrenchments with his handful of knights, scarcely allowing himself rest night or day, and ever ready to expose himself to the greatest dangers, with an ardour more becoming a junior officer than an old worn-out sovereign; which made his knights more lavish of their own lives than their paucity and present circumstances could well admit of.

Soon after this, the treason of D'Amarald was discovered, and he was condemned to death and executed; but by this time the city was reduced to the last extremity. The pope, emperor, and other crowned heads, had been long and often importuned by the grand-master for speedy assistance, without success; and, as an addition to all the other disasters, those succours which were sent to him from France and England perished at sea. The new supply which he had sent for of provisions from Candia had the same ill fate; so that the winds, seas, and every thing, seemed combined to bring on the destruction of that city and order. The only resource which could be thought of, under so dismal a situation, was, to send for the few remaining knights and forces which were left to guard the other islands, to come to the defence of their capital, in hopes that, if they could save this, the others might in time be recovered, in case the Turks should seize upon them. On the other hand, Solyman, grown impatient at the small ground his general had gained, gave him express orders to renew the attack with all imaginable speed

Rhodes. and vigour, before the succours which he apprehended were coming from Europe, obliged him to raise the siege. Achmed instantly obeyed, raised a battery of 17 large cannon against the bastion of Italy, and quickly after made himself master of it, obliging the garrison to retire farther into the city. Here the grand-master was forced to demolish two of the churches, to prevent the enemy's seizing on them; and, with their materials, caused some new works and entrenchments to be made to hinder their proceeding farther.

The Turks, however, gained ground every day, though they still lost vast numbers of their men: at length the 30th of November came, when the grand-master, and both the besiegers and besieged, thought the last assault was to be given. The bashaw Pyrrus, who commanded it, led his men directly to the entrenchments; upon which the bells of all the churches sounded the alarm. The grand-master, and his few knights, troops, and citizens, ran in crowds, and in a confused disorderly manner, to the entrenchments, each fighting in his own way, or rather as his fear directed him. This attack would have proved one of the most desperate that had yet been felt, had not a most vehement rain intervened, which carried away all the earth which the enemy had reared to serve them as a rampart against the artillery of the bastion of Auvergne; so that being now quite exposed to their continual fire, they fell in such great numbers, that the bashaw could no longer make them stand their ground, but all precipitately fled towards their camp. This last repulse threw the proud sultan into such a fury, that none of his officers dared to come near him; and the shame of his having now spent near six whole months with such a numerous army before the place, and having lost such myriads of his brave troops with so little advantage, had made him quite desperate, and they all dreaded the consequences of his resentment.

Pyrrus at length, having given it time to cool, ventured to approach him, and propose a new project to him, which, if approved, could hardly fail of success; which was, to offer the town a generous capitulation; and he observed, that in case the stubborn knights should reject it, yet being now reduced to so small a number, as well as their forces and fortifications almost destroyed, the citizens, who were most of them Greeks, and less ambitious of glory than solicitous for their own preservation, would undoubtedly accept of any composition that should secure to them their lives and effects.

This proposal being relished by the sultan, letters were immediately dispersed about the city in his name, exhorting them to submit to his government, and threatening them at the same time with the most dreadful effects of his resentment if they persisted in their obstinacy. Pyrrus likewise dispatched a Genoese to approach as near as he could to the bastion of Auvergne, and to intreat the knights to take pity of so many of their Christian brethren, and not expose them to the dreadful effects which must follow their refusal of a capitulation, so generously offered them at their last extremity. Other agents were likewise employed in other places: to all of whom the grand-master ordered some of his men to return this answer, That his order never treated with infidels but with sword in hand. An Albanian was sent next with a letter from the sultan to him, who met with the same repulse;

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after which, he ordered his men to fire upon any that should present themselves upon the same pretence; which was actually done. But this did not prevent the Rhodians from listening to the terms offered by the Turks, and holding frequent cabals upon that subject; in which the general massacre of a town taken by assault, the dreadful slavery of those that escaped, the rape of their wives and daughters, the destruction of their churches, the profanation of their holy relics and sacred utensils, and other dire consequences of an obstinate refusal, being duly weighed against the sultan's offers, quickly determined them which party to take. The grand-master, however, proving inexorable to all their intreaties, they applied to their Greek metropolitan, who readily went and represented all these things to him in the most pathetic terms: Yet he met with no better reception; but was told, that he and his knights were determined to be buried under the ruins of the city if their swords could no longer defend it, and he hoped their example would not permit them to show less courage on that occasion. This answer produced a quite contrary effect; and, as the citizens thought delays dangerous at such a juncture, they came in a body to him by the very next morning, and plainly told him, that if he paid no greater regard to their preservation, they would not fail of taking the most proper measures to preserve the lives and chastity of their wives and children.

This resolution could not but greatly alarm the grand-master; who thereupon called a council of all the knights, and informed them himself of the condition of the place. These all agreed, particularly the engineer Martinengo, that it was no longer defensible, and no other resource left but to accept the sultan's offers; adding, at the same time, that though they were all ready, according to the obligations of their order, to fight to the last drop of their blood, yet it was no less their duty to provide for the safety of the inhabitants, who, not being bound by the same obligations, ought not to be made a sacrifice to their glory. It was therefore agreed, with the grand-master's consent, to accept of the next offers the sultan should make. He did not let them wait long: for the fear he was in of a fresh succour from Europe, the intrepidity of the knights, and the shame of being forced to raise the siege, prevailed upon him to hang out his pacific flag, which was quickly answered by another on the Rhodian side; upon which the Turks, coming out of their trenches, delivered up the sultan's letter for the grand-master, to the grand-prior of St Giles, and the engineer Martinengo. The terms offered in it by Solyman appeared so advantageous, that they immediately exchanged hostages; and the knights that were sent to him had the honour to be introduced to him, and to hear them confirmed by his own mouth, though not without threats of putting all to fire and sword in case of refusal, or even delay. Two ambassadors were forthwith sent to him, to demand a truce of three days to settle the capitulation and interests of the inhabitants, who were part Greeks and part Latins; but this was absolutely refused by the impatient monarch, out of a suspicion of the rumoured succour being near, and that the truce was only to gain time till it was come.

He therefore ordered the hostilities to be renewed

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with

Rhodes.

Rhodes.

with fresh fury; in which the Rhodians made a most noble defence, considering their small number, and that they had now only the barbican or false bray of the bastion of Spain left to defend themselves, and once more repulsed the enemy: at which the sultan was so enraged, that he resolved to overpower them by numbers on the next day; which was, after a stout defence, so effectually done, that they were forced to abandon that outwork, and retire into the city. In the meanwhile, the burghers, who had but a day or two before raised a fresh uproar against the grand-master, under pretence that he was going to give them up a prey to an infidel who regarded neither oaths nor solemn treaties, perceiving their own danger, came now to desire him to renew the negotiations, and only begged the liberty of sending one of their deputies along with him, to secure their interests in the capitulation. He readily consented to it; but gave them a charge to show the bashaw Achmed the treaty formerly concluded between Bajazet and his predecessor d'Aubusson, in which the former had entailed a dreadful curse on any of his successors that should infringe it. This was done, in hopes that the showing it to his master, who valued himself so much upon his strict observance of his law, might produce some qualm in him which might lengthen the agreement, for they were still as much in hopes of a succour from Europe as he was in fear of it; but to their great surprise, Achmed had no sooner perused than he tore it all in pieces, trampled it under his feet, and in a rage ordered them to be gone. The grand-master found no other resource than to send them back to him the next day; when that minister, who knew his master's impatience to have the affair concluded, quickly agreed with them upon the terms, which were in substance as follow:

1. That the churches should not be profaned.
2. That the inhabitants should not be forced to part with their children to be made janissaries.
3. That they should enjoy the free exercise of their religion.
4. That they should be free from taxes during five years.
5. That those who had a mind to leave the island should have free leave to do so.
6. That if the grand-master and his knights had not a sufficient number of vessels to transport themselves and their effects into Candia, the sultan should supply that defect.
7. That they should have 12 days allowed them, from the signing of the articles, to send all their effects on board.
8. That they should have the liberty of carrying away their relics, chalices, and other sacred utensils belonging to the great church of St John, together with all their ornaments and other effects.
9. That they should likewise carry with them all the artillery with which they were wont to arm the galleys of the order.
10. That the islands belonging to it, together with the castle of St Peter, should be delivered up to the Turks.
11. That, for the more easy execution of these articles, the Turkish army should be removed at some miles distance from the capital.
12. That the aga of the janissaries, at the head of 4000 of his men, should be allowed to go and take possession of the place.

From this time the island of Rhodes has been subject to the Turks; and, like other countries subject to that tyrannical yoke, has lost its former importance. The air is good, and the soil fertile, but ill cultivated. The capital is surrounded with triple walls and double

ditches, and is looked upon to be impregnable. It is inhabited by Turks and Jews; the Christians being obliged to occupy the suburbs, as not being allowed to stay in the town during the night. The town is situated in E. Long. 28. 25. N. Lat. 36. 54.

RHODIOLA, ROSE-WORT, in botany: A genus of the octandria order, belonging to the diœcia class of plants; and in the natural method ranking under the 13th order, *Succulentæ*. The male calyx is quadripartite; the corolla tetrapetalous. The female calyx is quadripartite, and there is no corolla; the nectaria are four; the pistils four; and there are four polyspermous capsules. There are two species, the rosea and the minor: the first grows naturally in the clefts of the rocks and rugged mountains of Wales, Yorkshire, and Westmoreland. It has a very thick fleshy root, which when cut or bruised sends out an odour like roses. It has thick succulent stalks, like those of orpine, about nine inches long, closely garnished with thick succulent leaves indented at the top. The stalk is terminated by a cluster of yellowish herbaceous flowers, which have an agreeable scent, but are of short continuance. The second sort is a native of the Alps, and has purplish flowers which come out later than the former; it is also of a smaller size. Both species are easily propagated by parting their roots; and require a shady situation, and dry undunged soil. The fragrance of the first species, however, is greatly diminished by cultivation.

OIL OF RHODIUM. See **ASPALATHUS**.

RHODODENDRON, DWARF ROSE-BAY, in botany: A genus of the monogynia order, belonging to the decandria class of plants; and in the natural method ranking under the 18th order, *Bicornes*. The calyx is quinquepartite; the corolla funnel-shaped; the stamina declining; the capsule quinquelocular. There are seven species: the most remarkable of which are, 1. The *hirsutum*, with naked hairy leaves, grows naturally on the Alps and several mountains of Italy. It is a low shrub, which seldom rises two feet high, sending out many ligneous branches covered with a light-brown bark, garnished closely with oval spear-shaped leaves, sitting pretty close to the branches. They are entire, having a great number of fine iron-coloured hairs on their edges and under side. The flowers are produced in bunches at the end of the branches in May, having one funnel-shaped petal cut into five obtuse segments, and of a pale-red colour. They make a good show, and are succeeded by oval capsules, containing ripe seeds in August. 2. The *ferrugineum*, with smooth leaves, hairy on their under side, is a native of the Alps and Apennines. It rises with a shrubby stalk near three feet high, sending out many irregular branches covered with a purplish bark, and closely garnished with smooth spear-shaped entire leaves, whose borders are reflexed backward; the upper side is of a light lucid green, their under side of an iron colour. The flowers are produced at the ends of the branches, are funnel-shaped, cut into five segments, and of a pale rose colour. These plants are propagated by seeds; but, being natives of barren rocky soils and cold situations, they do not thrive in gardens, and for want of their usual covering of snow in the winter are often killed by frost in this country. 3. The *chamæcistus*, or ciliated-leaved dwarf rose-bay, is a low deciduous shrub, native of Mount Baldus, and near Saltzburg in Germany. It grows

Rhodiola
Rhododendron.

Rhododendron.

grows to the height of about a yard; the branches are numerous, produced irregularly, and covered with a purplish bark. The leaves are oval, spear-shaped, small, and in the under surface of the colour of iron. The flowers are produced at the end of the branches in bunches, are of a wheel-shaped figure, pretty large, of a fine crimson colour, and handsome appearance. They appear in June, and are succeeded by oval capsules containing ripe seeds in September. 4. The Dauricum, or Daurian dwarf rose-bay, is a low deciduous shrub, and native of Dauria. Its branches are numerous, and covered with a brownish bark. The flowers are wheel-shaped, large, and of a beautiful rose-colour: they appear in May, and are succeeded by oval capsules full of seeds, which in England do not always ripen. 5. The maximum, or American mountain laurel, is an evergreen shrub, and native of Virginia, where it grows naturally on the highest mountains, and on the edges of cliffs, precipices, &c. where it reaches the size of a moderate tree, though with us it seldom rises higher than six feet. The flowers continue by succession sometimes more than two months, and are succeeded by oval capsules full of seeds. 6. The Ponticum, or Pontic dwarf rose-bay, is an evergreen shrub, native of the east, and of most shady places near Gibraltar. It grows to the height of four or five feet. The leaves are spear-shaped, glossy on both sides, acute, and placed on short footstalks on the branches: the flowers, which are produced in clusters, are bell-shaped, and of a fine purple colour. They appear in July, and are succeeded by oval capsules containing seeds, which in England seldom attain to maturity.

In Siberia, a species of this plant is used with great success in gouty and rheumatic affections; of which the following account is given in the 5th volume of the Medical Commentaries, p. 434. in a letter from Dr Guthrie of Petersburg to Dr Duncan of Edinburgh. "It is the rhododendrum chrysanthemum, nova species, belonging to the class of decandria, discovered by Professor Pallas in his tour through Siberia. This Alpine shrub grows near the tops of the high mountains named *Sajanes*, in the neighbourhood of the river Jenise in Siberia; and delights in the skirts of the snow-covered summits, above the region that produces trees. When the inhabitants of that country mean to exhibit it in arthritic or rheumatic disorders, they take about two drams of the dried shrub, stalk and leaves, with nine or ten ounces of boiling water, and putting them into an earthen pot, they lute on the head, and place them in an oven during the night. This infusion (for it is not allowed to boil) the sick man drinks next morning for a dose. It occasions heat, together with a degree of intoxication, resembling the effects of spirituous liquors, and a singular kind of uneasy sensation in the parts affected, accompanied with a sort of vermiculation, which is likewise confined to the diseased parts. The patient is not permitted to quench the thirst which this medicine occasions; as fluids, particularly cold water, produce vomiting, which lessens the power of the specific. In a few hours, however, all the disagreeable effects of the dose disappear, commonly with two or three stools. The patient then finds himself greatly relieved of his disorder; and has seldom occasion to repeat the medicine above two or three times to complete a cure. The inhabitants of Siberia call this shrub *chei* or

tea, from their drinking, in common, a weak infusion of it, as we do the Chinese plant of that name. This practice shows that the plant, used in small quantities, must be innocent. Professor Pallas informs me, that he sent some time ago some of this shrub dried to Professor Koelpin at Stetin; and he showed me a letter from that gentleman, where he says, that he has given it with success in several cases, particularly in what he calls the *arthritica venerea*, with a tophus arthriticus on the carpus, and it produced a complete cure. It must be remarked, that the dose which these hardy Siberians take, who are also in the habit of drinking it as tea, would, in all probability, be too strong for our countrymen; however, it is a medicine which we may certainly give with safety, beginning with small doses."

RHŒA. See RHEA.

RHŒADEÆ (*rhœas*, Linnæus's name, after Dioscorides, for the red poppy), the name of the 27th order in Linnæus's fragments of a natural method, consisting of poppy and a few genera which resemble it in habit and structure. See BOTANY, p. 462.

RHOMBOIDES, in geometry, a quadrilateral figure whose opposite sides and angles are equal, but is neither equilateral nor equiangular.

RHOMBOIDES, in anatomy, a thin, broad, and obliquely square fleshy muscle, situated between the basis of the scapula and the spina dorsi; so called from its figure. Its general use is to draw backward and upward the subspinal portion of the basis scapulæ.

RHOMBUS, in geometry, an oblique-angled parallelogram, or quadrilateral figure, whose sides are equal and parallel, but the angles unequal, two of the opposite ones being obtuse and two acute.

RHONE, one of the largest rivers in France, which, rising among the Alps of Switzerland, passes through the lake of Geneva, visits that city, and then runs south-west to Lyons; where, joining the river Soane, it continues its course due south, passing by Orange, Avignon, and Arles, and falls into the Mediterranean a little above Marseilles.

RHOPIUM, in botany: A genus of the triandria order, belonging to the gynandria class of plants; and in the natural method ranking with those that are doubtful. The calyx is monophyllous and separtite; there is no corolla nor any stamina; the three antheræ are each attached to one of the styli; the capsule is trilocular and sexlocular, each containing two seeds. There is only one species, viz. the meborca, a native of Guiana. This is a shrub rising about three or four feet in height. The flowers grow in the form of a corymbus; they are of a yellowish green colour; the capsules are black.

RHOPOLA, in botany: A genus of the monogynia order, belonging to the tetrandria class of plants; and in the natural method ranking with those that are doubtful. There is no calyx; the petals are four, oblong, obtuse, and narrowing at the base; the stamina are four, inserted in the corolla, and have large antheræ; the seed-vessel unilocular, and contains one seed. There is only one species, viz. the montana. This is a shrubby plant growing in Guiana, and remarkable for the great number of branches sent off from its trunk in every direction, and for the fetid smell of the wood and bark of this plant.

Rhœa
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Rhopola

Rhubarb

Rhus.

RHUBARB. See RHEUM.

RHUMB, in navigation, a vertical circle of any given place, or intersection of such a circle with the horizon; in which last sense rhumb is the same with a point of the compass.

RHUMB-Line is also used for the line which a ship describes when sailing in the same collateral point of the compass, or oblique to the meridians.

RHUS, SUMACH, in botany: A genus of the trigynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 43d order, *Dumosa*. The calyx is quinquepartite; the petals five; the berry monospermous. There are 24 species, of which the most remarkable are,

1. The coriaria, or elm-leaved sumach, grows naturally in Italy, Spain, Turkey, Syria, and Palestine. The branches of this tree are used instead of oak-bark for tanning of leather; and it is said that the Turkey leather is all tanned with this shrub. It has a ligneous stalk, which divides at bottom into many irregular branches, rising to the height of eight or ten feet; the bark is hairy, of an herbaceous brown colour; the leaves are winged, composed of seven or eight pair of lobes, terminated by an odd one, bluntly sawed on their edges, hairy on their under side, of a yellowish-green colour, and placed alternately on the branches; the flowers grow in loose panicles on the end of the branches, which are of a whitish herbaceous colour, each panicle being composed of several spikes of flowers sitting close to the footstalks. The leaves and seeds of this sort are used in medicine, and are esteemed very restraining and stiptic.

2. The typhinum, Virginian sumach, or vinegar plant, grows naturally in almost every part of North America. This hath a woody stem, with many irregular branches, which are generally crooked and deformed. The young branches are covered with a soft velvet-like down, resembling greatly that of a young stag's horn, both in colour and texture, from whence the common people have given it the appellation of *stag's horn*; the leaves are winged, composed of six or seven pair of oblong heart-shaped lobes, terminated by an odd one, ending in acute points, hairy on their underside, as is also the midrib. The flowers are produced in close tufts at the end of the branches, and are succeeded by seeds, inclosed in purple woolly succulent covers; so that the bunches are of a beautiful purple colour in autumn; and the leaves, before they fall in autumn, change to a purplish colour at first, and before they fall to a feuillet-mort. This plant, originally a native of North America, has been long cultivated in the north of Germany, and is lately introduced into Russia. It has got the name of the *vinegar plant* from the double reason of the young germen of its fruit, when fermented, producing either new or adding to the strength of old weak vinegar, whilst its ripe berries afford an agreeable acid, which might supply the place when necessary of the citric acid. The powerful astringency of this plant in all its parts recommends it as useful in several of the arts. As for example, the ripe berries boiled with alum make a good dye for hats. The plant in all its parts may be used as a succedaneum for oak-bark in tanning, especially the white glove leather. It will likewise answer to prepare a dye for black, green, and yellow colours; and with martial vitriol it makes a good ink. The milky juice

that flows from incisions made in the trunk or branches, makes when dried the basis of a varnish little inferior to the Chinese. Bees are remarkably fond of its flowers; and it affords more honey than any of the flowering shrubs, so that it may prove a useful branch of economy, where rearing these insects is an object. The natives of America use the dried leaves as tobacco.

3. The glabrum, with winged leaves, grows naturally in many parts of North America; this is commonly titled by the gardeners *New England sumach*. The stem of this is stronger and rises higher than that of the former; the branches spread more horizontally; they are not quite so downy as those of the last, and the down is of a brownish colour; the leaves are composed of many more pair of lobes, which are smooth on both sides; the flowers are disposed in loose panicles, which are of an herbaceous colour.

4. The Carolinianum, with sawed winged leaves, grows naturally in Carolina; the seeds of this were brought from thence by the late Mr Catesby, who has given a figure of the plant in his *Natural History of Carolina*. This is by the gardeners called the *scarlet Carolina sumach*; it rises commonly to the height of seven or eight feet, dividing into many irregular branches, which are smooth, of a purple colour, and pounced over with a greyish powder, as are also the footstalks of the leaves. The leaves are composed of seven or eight pair of lobes, terminated by an odd one; these are not always placed exactly opposite on the midrib, but are sometimes alternate. The upper side of the lobes are of a dark green, and their under hoary, but smooth. The flowers are produced at the end of the branches in very close panicles, which are large, and of a bright red colour.

5. The Canadense, with winged spear-shaped leaves, grows naturally in Canada, Maryland, and several other parts of North America. This hath smooth branches of a purple colour, covered with a grey pounce. The leaves are composed of seven or eight pair of lobes, terminated by an odd one; the lobes are spear-shaped, sawed on their edges, of a lucid green on their upper surface, but hoary on their under, and are smooth. The flowers are produced at the end of the branches in large panicles, which are composed of several smaller, each standing upon separate footstalks; they are of a deep red colour, and the whole panicle is covered with a grey pounce, as if it had been scattered over them.

6. The copallinum, or narrow-leaved sumach, grows naturally in most parts of North America, where it is known by the title of *beach sumach*, probably from the place where it grows. This is of humbler growth than either of the former, seldom rising more than four or five feet high in Britain, dividing into many spreading branches, which are smooth, of a light brown colour, closely garnished with winged leaves, composed of four or five pair of narrow lobes, terminated by an odd one; they are of a light green on both sides, and in autumn change purplish. The midrib, which sustains the lobes, has on each side a winged or leafy border, which runs from one pair of lobes to another, ending in joints at each pair, by which it is easily distinguished from the other sorts. The flowers are produced in loose panicles at the end of the branches, of a yellowish herbaceous colour.

These

Rhus.

These six sorts are hardy plants, and will thrive in the open air here. The first and fourth sorts are not quite so hardy as the others, so must have a better situation, otherwise their branches will be injured by severe frost in the winter. They are easily propagated by seeds, which if sown in autumn the plants will come up the following spring; but if they are sown in spring, they will not come up till the next spring; they may be either sown in pots, or the full ground. If they are sown in pots in autumn, the pots should be placed under a common frame in winter, where the seeds may be protected from hard frost; and in the spring, if the pots are plunged into a very moderate hot-bed, the plants will soon rise, and have thereby more time to get strength before winter. When the plants come up, they must be gradually hardened to bear the open air, into which they should be removed as soon as the weather is favourable, placing them where they may have the morning sun; in the summer, they must be kept clean from weeds, and in dry weather watered. Toward autumn it will be proper to stint their growth by keeping them dry, that the extremity of their shoots may harden; for if they are replete with moisture, the early frosts in autumn will pinch them, which will cause their shoots to decay almost to the bottom if the plants are not screened from them. If the pots are put under a common frame in autumn, it will secure the plants from injury: for while they are young and the shoots soft, they will be in danger of suffering, if the winter proves very severe; but in mild weather they must always enjoy the open air, therefore should never be covered but in frost. The spring following, just before the plants begin to shoot, they should be shaken out of the pots, and carefully separated, so as not to tear the roots; and transplanted into a nursery, in rows three feet asunder, and one foot distance in the rows. In this nursery they may stand two years to get strength, and then may be transplanted where they are to remain.

7. Besides these, Linnæus has included in this genus the toxicodendron or poison-tree, under the name of *Rhus vernix* or *poison-ash*. This grows naturally in Virginia, Pennsylvania, New England, Carolina, and Japan, rising with a strong woody stalk to the height of 20 feet and upwards; though in this country it is seldom seen above 12, by reason of the plants being extremely tender. The bark is brown, inclining to grey; the branches are garnished with winged leaves composed of three or four pair of lobes terminated by an odd one. The lobes vary greatly in their shape, but for the most part they are oval and spear-shaped. The footstalks become of a bright purple towards the latter part of summer, and in autumn all the leaves are of a beautiful purple before they fall off.

All the species of sumach abound with an acrid milky juice, which is reckoned poisonous; but this property is most remarkable in the vernix. The most distinct account of it is to be found in Professor Kalm's Travels in North America. "An incision (says he) being made into the tree, a whitish yellow juice, which has a nauseous smell, comes out between the bark and the wood. This tree is not known for its good qualities, but greatly so for the effect of its poison; which, tho' it is noxious to some people, yet does not in the least affect others. And therefore one person can handle the tree as he pleases, cut it, peel off its bark, rub it or

the wood upon his hands, smell at it, spread the juice upon his skin, and make more experiments, with no inconvenience to himself; another person, on the contrary, dares not meddle with the tree while its wood is fresh; nor can he venture to touch a hand which has handled it, nor even to expose himself to the smoke of a fire which is made with this wood, without soon feeling its bad effects; for the face, the hands, and frequently the whole body, swells excessively, and is affected with a very acute pain. Sometimes bladders or blisters arise in great plenty, and make the sick person look as if he was infected by a leprosy. In some people the external thin skin, or cuticle, peels off in a few days, as is the case when a person has scalded or burnt any part of his body. Nay, the nature of some persons will not even allow them to approach the place where the tree grows, or to expose themselves to the wind when it carries the effluvia or exhalations of this tree with it, without letting them feel the inconvenience of the swelling which I have just now described. Their eyes are sometimes shut up for one, or two, or more days together, by the swelling. I know two brothers, one of whom could without danger handle this tree in what manner he pleased, whereas the other could not come near it without swelling. A person sometimes does not know that he has touched this poisonous plant, or that he has been near it, before his face and hands show it by their swelling. I have known old people who were more afraid of this tree than of a viper; and I was acquainted with a person who, merely by the noxious exhalations of it, was swelled to such a degree, that he was as stiff as a log of wood, and could only be turned about in sheets.

"I have tried experiments of every kind with the poison-tree on myself. I have spread its juice upon my hands, cut and broke its branches, peeled off its bark, and rubbed my hands with it, smelt at it, carried pieces of it in my bare hands, and repeated all this frequently, without feeling the baneful effects so commonly annexed to it; but I, however, once experienced, that the poison of the sumach was not entirely without effect upon me. On a hot day in summer, as I was in some degree of perspiration, I cut a branch of the tree, and carried it in my hand for about half an hour together, and smelt at it now and then. I felt no effects from it in the evening. But next morning I awoke with a violent itching of my eye-lids and the parts thereabouts; and this was so painful, that I could hardly keep my hands from it. It ceased after I had washed my eyes for a while with very cold water. But my eye-lids were very stiff all that day. At night the itching returned; and in the morning when I awoke, I felt it as ill as the morning before, and I used the same remedy against it. However, it continued almost for a whole week together; and my eyes were very red, and my eye-lids were with difficulty moved during all that time. My pain ceased entirely afterwards. About the same time I had spread the juice of the tree very thick upon my hand. Three days after, they occasioned blisters, which soon went off without affecting me much. I have not experienced any thing more of the effects of this plant, nor had I any desire so to do. However, I found that it could not exert its power upon me when I was not perspiring.

"I have never heard that the poison of this sumach has

Rhus.

Rhyme
||
Riband.

has been mortal, but the pain ceases after a few days duration. The natives formerly made their flutes of this tree, because it has a great deal of pith. Some people assured me, that a person suffering from its noisome exhalations, would easily recover by spreading a mixture of the wood burnt to charcoal, and hog's lard, upon the swelled parts. Some asserted, that they had really tried this remedy. In some places this tree is rooted out, on purpose that its poison may not affect the workmen."

The natives are said to distinguish this tree in the dark by its extreme coldness to the touch. The juice of some kinds of sumach, when exposed to the heat of the sun, becomes so thick and clammy, that it is used for bird-lime, and the inspissated juice of the poison-ash is said to be the fine varnish of Japan. A cataplasm made with the fresh juice of the poison-ash, applied to the feet, is said by Hughes, in his Natural History of Barbadoes, to kill the vermin called by the West Indians *chiggers*. Very good vinegar is made from an infusion of the fruit of an American sumach, which for that reason is called the *vinegar-tree*. The resin called *gum copal* is from the *rhus copallinum*. See COPAL.

RHYME, RHIME, *Ryme*, or *Rime*, in poetry, the similar sound or cadence and termination of two words which end two verses, &c. Or rhyme is a similitude of sound between the last syllable or syllables of a verse, succeeding either immediately or at a distance of two or three lines. See POETRY, n° 177, &c.

RHYMER (Thomas the), was a native of the parish of Earlstown, in the county of Berwick. His real name and title was Sir Thomas Lermont. He lived at the west end of Earlstown, where part of his house is still standing, called *Rhymer's Tower*; and there is a stone built in the fore wall of the church with this inscription on it,

Auld Rhymer's race lies in this place.

He lived in the 13th century, and was contemporary with one of the earls of March, who lived in the same place.

RHYTHM, in music, the variety in the movement, as to the quickness or slowness, length or shortness, of the notes. Or it may be defined more generally, the proportion which the parts of the motion have to each other.

RIAL, or RYAL, a Spanish coin. See MONEY-Table.

RIAL, or *Royal*, is also the name of a piece of gold anciently current among us for 10 s.

RIBAN, or RIBBAN, in heraldry, the eighth part of a bend. See HERALDRY, p. 447.

RIBAND, or RIBBON, a narrow sort of silk, chiefly used for head-ornaments, badges of chivalry, &c.

In order to give our readers an idea of the manner in which this curious and valuable branch of manufactures is managed, a view of the ribbon-weaver at his loom is represented in Plate CCCCXXXV. where, 1. Is the frame of the loom. 2. The castle, containing 48 pulleys. 3. The branches, on which the pulleys turn. 4. The tires, or the riding-cords, which run on the pulleys, and pull up the high-lisses. 5. The lift-sticks, to which the high-lisses are tied. 6. The high-lisses, or lifts, are a number of long threads, with platines, or plate-leads, at the bottom; and ringlets, or

loops, about their middle, through which the cords or cross-threads of the ground-harness ride. 7. The plate-leads, or platines, are flat pieces of lead, of about six inches long, and three or four inches broad at the top, but round at the bottom; some use black slates instead of them: their use is to pull down those lisses which the workman had raised by the treddle, after his foot is taken off. 8. The branches or cords of the ground harness, which go thro' the loops in the middle of the high-lisses: on the well-ordering of these cords chiefly depends the art of ribbon-weaving, because it is by means of this contrivance that the weaver draws in the thread or silk that makes the flower, and rejects or excludes the rest. 9. The batton: this is the wooden frame that holds the reed or shuttle, and beats or closes the work: where, observe, that the ribbon-weaver does not beat his work; but as soon as the shuttle is passed, and his hand is taken away, the batton is forced, by a spring from the top, to beat the work close. 10. The shuttle, or reed. 11. The spring of the batton, by which it is made to close the work. 12. The long-harness are the front-reeds, by which the figure is raised. 13. The linguas are the long pieces of round or square lead, tied to the end of each thread of the long-harness to keep them tight. 14. The broad piece of wood, about a foot square, leaning somewhat forward, intended to ease the weaver as he stoops to his shuttle; it is fixed in the middle of the breast-beam. Some weavers, instead of this, have a contrivance of a cord or rope that is fastened to the front-frame, and comes across his breast; this is called a *stopfall*. 15. The seat-bench; this leans forward very much. 16. The foot-step to the treddles. 17. The breast-beam, being a cross-bar that passes from one of the standards to the other, so as to front the workman's breast: to this breast-bar is fixed a roll, upon which the ribbon passes in its way to be rolled upon the roller, that turns a little below. 18. The clamps, or pieces of wood, in which the broaches that confine the treddles rest. 19. The treddles are long narrow pieces of wood, to the ends of which the cords that move the lisses are fastened. 20. The treddle-cords are only distinguished from the riding-cords by a board full of holes, which divide them, in order to prevent the plate-leads, which are tied to the high-lisses, from pulling them too high when the workman's foot is off the treddle: which stop is made by a knot in the treddle-cord, too big to be forced through that hole in the board. 21. The lames are two pieces of thin narrow boards, only used in plain works, and then to supply the place of the long-harness. 22. The knee-roll, by which the weaver rolls up his ribbon as he sees proper, or by bit and bit as it is finished. 23. The back-rolls, on which the warp is rolled. It is to be observed, that there is always as many rolls as colours in the work to be wove. 24. The clamps, which support the rollers. 25. The returning-sticks, or, as others call them, the *returns*, or the *tumblers*, or *pulleys*, to which the tiers are tied, to clear the course of cords through the high-lisses. 26. The catch-board for the tumblers. 27. The tire-board. 28. The buttons for the knee-rolls and treddle-board, described in number 20.

Ribbons of all sorts are prohibited from being imported.

RIBANDS (from *rib* and *bend*), in naval architecture,

Riband,
Ribands.

Ribands,
Ribes.

ture, long narrow flexible pieces of timber, nailed up on the outside of the ribs, from the stem to the stern-post, so as to envelope the ship lengthwise, and appear on her side and bottom like the meridians on the surface of the globe. The ribands being judiciously arranged with regard to their height and distance from each other, and forming regular sweeps about the ship's body, will compose a kind of frame, whose interior surface will determine the curve of all the intermediate or filling-timbers which are stationed between the principal ones. As the figure of the ship's bottom approaches to that of a conoid, and the ribands have a limited breadth, it is apparent that they cannot be applied to this convex surface without forming a double curve, which will be partly vertical and partly horizontal; so that the vertical curve will increase by approaching the stem, and still more by drawing near the stern-post. It is also evident, that by deviating from the middle line of the ship's length, as they approach the extreme breadth at the midship-frame, the ribands will also form an horizontal curve. The lowest of these, which is terminated upon the stem and stern-post, at the height of the rising-line of the floor, and answers to the upper part of the floor-timber upon the midship-frame, is called the *floor-riband*. That which coincides with the wing-transom, at the height of the lower-deck upon the midship-frame, is termed the *breadth-riband*; all the rest, which are placed between these two, are called *intermediate ribands*. See SHIP-BUILDING.

RIBES, the CURRANT and GOOSEBERRY-BUSH: A genus of the monogynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 36th order, *Pomaceæ*. There are five petals, and stamina inserted into the calyx; the style is bifid; the berry polyspermous, inferior.

The currant and the gooseberry were long considered each as a separate genus; *ribes* the currant, and *grossularia* the gooseberry; but they are now joined together, the *grossularia* being made a species of *ribes*; all the currant kinds having inermous or thornless branches, and racemous clusters of flowers and fruit; and the gooseberry have spinous branches, and flowers and fruit for the most part singly.

There are three species of the currant-tree, two of which, and their varieties, merit culture for their fruit; the other as a plant of variety or observation: all of which are inermous or unarmed, having no thorns on the branches.

1. *Rubrum*, common red-currant tree, &c. hath a shrubby stem, dividing low into many branches, forming a bushy head, five or six feet high or more, without thorns; broad trilobate leaves, and smooth pendulous clusters of plane greenish flowers, succeeded by small clusters of berries. It grows naturally in woods and the hedges in most parts of Europe, and comprises all sorts of red and white currants; as, common small red currant—large bunched red currant—Champaigne pale-red currant—common small white currant—large white Dutch currant—yellow blotched-leaved currant—silver striped leaved—gold striped leaved—gooseberry-leaved. All these sorts are varieties of one species, *ribes rubrum*, or common red currant; it being the parent from which all the others were first obtained from the seed, and improved by culture. They all flower in the spring, and the fruit ripens in June and

July; and by having the trees in different situations and modes of training, such as plantations of standards in the open quarters for the general supply, others trained against walls or pales of different aspect, the fruit may be continued ripe in good perfection from about the middle of June until November, provided the later crops are defended with mats or nets from the birds.

2. The *nigrum*, or black currant tree, hath a shrubby stem, dividing low into many branches, forming a bushy head five or six feet high; broad trilobate leaves of a rank odour, and having racemous clusters of oblong greenish flowers, succeeded by thin clusters of black berries. The fruit of this species being of a strong flavour, and somewhat physical relish, is not generally liked; it, however, is accounted very wholesome: there is also made of it a syrup of high estimation for sore throats and quinies; hence the fruit is often called *squinancy berries*. There is a variety called the *Pennsylvanian black currant*, having smaller shoots and leaves, not strong scented, and small fruit but of little value; so the shrub is esteemed only for variety and shrubberies. The mode of bearing of all the varieties of currants is both in the old and young wood all along the sides of the branches and shoots, often upon a sort of small sprigs and snags, producing the fruit in numerous long pendulous clusters.

3. The *grossularia*, or common gooseberry bush, rises with a low shrubby stem, dividing low into a very branchy bushy head, armed with spines; trilobate smallish leaves, having hairy ciliated footstalks; and small greenish flowers, succeeded by hairy berries. It consists of many varieties, of different sizes and colours.

4. The *reclinatum*, or reclinated broad-leaved gooseberry-bush, rises with a low shrubby stem, and reclinated somewhat prickly branches, trilobate broadish leaves, and small greenish flowers, having the pedunculi furnished with triphyllous bractea.

5. The *oxyacanthoides*, or oxyacantha-leaved gooseberry, hath a shrubby stem, and branches armed on all sides with spines, and largish trilobate hawthorn leaves.

6. The *uva crispa*, or smooth gooseberry, hath a shrubby stem, and branches armed with spines; trilobate leaves; pedicles having monophyllous bractea; and smooth fruit.

7. The *cynosbati*, or prickly-fruited gooseberry bush, hath a shrubby stem and branches, armed with spines, mostly at the axillas, and prickly fruit in clusters.

All the above seven species of ribes, both currants and gooseberry kinds, and their respective varieties, are very hardy shrubs, that prosper almost anywhere, both in open and shady situations; and in any common soil; bearing plentifully in any exposure, though in open sunny situations they produce the largest and fairest fruit, ripening to a richer vinous flavour; but it is eligible to plant them in different situations and aspects, in order to have the fruit as early and late as possible.

They are commonly planted in the kitchen-garden, mostly as dwarf standards, in the open quarters, for the general supply; being disposed sometimes in continued plantations in rows, eight or ten feet by six asunder, where great quantities of the fruit are required for market or other large supplies; and are sometimes disposed in single ranges round the outward edge.

Ribes.

Ribes
Riccia.

edge of the quarters, eight feet asunder; frequently in single cross rows, in order to divide the ground into separate wide plats or breaks, of from 20 to 30 or 40 feet wide, which also serves to shelter the ground a little in winter; in all of which methods of planting them as standards, they should be generally trained up to a single stem about a foot high, then suffered to branch out every way all around into bushy heads, keeping the middle, however, open, and the branches moderately thin, to admit the sun and free air; though if some are fanned, that is, trimmed on two sides oppositely, so as to make the other branches range in a line like an espalier, they will take up much less of the ground, and, by admitting the sun and air more freely, they will produce large fair fruit. They are likewise trained against walls or palings, like other wall-trees, but principally some of the large red and white Dutch currants, in which they will produce fine large fruit, and those against any south fence will ripen early, and be high flavoured; but it is proper to plant a few both against south, north, east, and west walls, in order to obtain the fruit ripe both early and late, in a long succession. It is also proper to plant a few of the finest sorts of gooseberries against a warm fence, both to have early green gooseberries for tarts, &c. as well as to ripen early; and they will grow very large and fine. Sometimes both currants and gooseberries are also trained in low espaliers for variety, and they produce very fine fruit.

The fruits both of the currant and gooseberry are of an acid and cooling nature, and as such are sometimes used in medicine, especially the juice reduced to a jelly by boiling with sugar. From the juice of currants also a very agreeable wine is made.

RICAUT, or RYCAUT (Sir Paul), an eminent English traveller, of the time of whose birth we find no account; but in 1661, he was appointed secretary to the earl of Winchelsea, who was sent ambassador extraordinary to the Ottoman Porte. During his continuance in that station, he wrote, "The present State of the Ottoman Empire, in three books, containing the maxims of the Turkish policy, their religion, and military discipline," London, folio, 1670. He afterwards resided 11 years as consul at Smyrna, where, at the command of Charles II. he composed "The present state of the Greek and Armenian Churches, anno Christi 1678." On his return, Lord Clarendon being appointed lord-lieutenant of Ireland, made him his principal secretary for Leinster and Connaught: king James II. knighted him; and made him one of the privy council in Ireland, and judge of the court of admiralty; all which he held to the Revolution. He was employed by King William as resident at the Hanse-towns in Lower Saxony, where he continued for ten years; but being worn out with age and infirmities, he obtained leave to return in 1700, and died the same year. Ricaut continued "Knolles's History of the Turks, and Platina's Lives of the Popes;" besides which, there are some other productions under his name.

RICCIA, in botany: A genus of the natural order of algæ, belonging to the cryptogamia class of plants. There is no calyx, but a vesicular cavity within the substance of the leaf. There is no corolla; the antheræ are cylindrical, and sessile, placed on the germen, which is turbinated; the style is filiform, perforating the an-

thera; and the seed-case is spherical, crowned with the withered anthera; the seeds are hemispherical and pedicellated.

RICE. See ORYZA. "Rice *bras*, (says Mr Marten) whilst in the husk, is in India called *paddee*, and assumes a different name in each of its other various states. We observe no distinction of this kind in Europe, where our grain retains through all its stages, till it becomes flour, its original name of barley, wheat, or oats. The following, beside many others, are names applied to rice, in its different stages of growth and preparation: *paddee*, original name of the seed: *oossay*, grain of last season: *bunnee*, the plants before removed to the fawoors: *bras* or *bray*, rice, the husk of the *paddee* being taken off: *charroop*, rice cleaned for boiling; *naffee*, boiled rice: *peerang*, yellow rice: *jambar*, a service of rice, &c.

Among people whose general objects of contemplation are few, those which do of necessity engage their attention, are often more nicely discriminated than the same objects among more enlightened people, whose ideas ranging over the extensive field of art and science, disdain to fix long on obvious and common matters. *Paddee*, on Sumatra and the Malay islands, is distinguished into two sorts; *Laddang* or up-land *paddee*, and *Sawoor* or low-land, which are always kept separate, and will not grow reciprocally. Of these the former bears the higher price, being a whiter, heartier, and better flavoured grain, and having the advantage in point of keeping. The latter is much more prolific from the seed, and liable to less risk in the culture, but is of a watery substance, produces less increase in boiling, and is subject to a swifter decay. It is, however, in more common use than the former. Beside this general distinction, the *paddee* of each sort, particularly the *Laddang*, presents a variety of species, which, as far as my information extends, I shall enumerate, and endeavour to describe. The common kind of dry ground *paddee*: colour, light brown: the size rather large, and very little crooked at the extremity. *Paddee undallong*: dry ground: short round grain: grows in whorles or bunches round the stock. *Paddee ebbafs*: dry ground: large grain: common. *Paddee galloo*: dry ground: light coloured: scarce. *Paddee fennee*: dry ground: deep coloured: small grain: scarce. *Paddee ejoo*: dry ground: light coloured. *Paddee kooring*: dry ground: deep yellow: fine rice: crooked, and pointed. *Paddee coocoor ballum*: dry ground: much esteemed: light coloured: small, and very much crooked, resembling a dove's nail, from whence its name. *Paddee pefang*: dry ground: outer coat light brown; inner red: longer, smaller, and less crooked than the *coocoor ballum*. *Paddee Santong*: the finest sort that is planted in wet ground: small, straight, and light coloured. In general it may be observed that the larger grained rice is the least esteemed, and the smaller and whiter the most prized. In the Lampoon country they make a distinction of *paddee crawang* and *paddee jerroo*; the former of which is a month earlier in growth than the latter."

RICE-BIRD. See ORYZIVERA.

RICE-BUNTING. See EMBERIZA.

RICHARD I. II. and III. kings of England. See ENGLAND.

RICHARDIA, in botany: A genus of the monogynia order, belonging to the hexandria class of plants; and

Rice
Richardia.
History of
Sumatra,
p. 60.

Richardson. and in the natural method ranking under the 47th order, *Stellata*. The calyx is fexpartite; the corolla monopetalous, and subcylindrical; and there are three seeds.

RICHARDSON (Samuel), a celebrated English sentimental novel-writer, born in 1688, was bred to the business of a printer, which he exercised all his life with eminence. Though he is said to have understood no language but his own, yet he acquired great reputation by his three epistolary novels, intitled *Pamela*, *Clarissa*, and *Sir Charles Grandison*; which show an uncommon knowledge of human nature. His purpose being to promote virtue, his pictures of moral excellence are by much too highly coloured; and he has described his favourite characters such rather as we might wish them to be, than as they are to be found in reality. It is also objected by some, that his writings have not always the good effect intended: for that, instead of improving natural characters, they have fashioned many artificial ones; and have taught delicate and refined ladies and gentlemen to despise every one but their own self-exalted persons. But after all that can be urged of the ill effects of Mr Richardson's novels on weak minds, eager to adopt characters they can only burlesque; a sensible reader will improve more by studying such models of perfection, than of those nearer to the natural standard of human frailty, and where those frailties are artfully exaggerated so as to fix and misemploy the attention on them. A stroke of the palsy carried off Mr Richardson, after a few days illness, upon the 4th of July 1761. He was a man of fine parts, and a lover of virtue; which, for aught we have ever heard to the contrary, he showed in his life and conversation as well as in his writings. Besides the works above-mentioned, he is the author of an *Æsop's Fables*, a *Tour through Britain*, 4 vols, and a volume of *Familiar Letters upon business and other subjects*. He is said from his childhood to have delighted in letter-writing; and therefore was the more easily led to throw his romances into that form; which, if it enlivens the history in some respects, yet lengthens it with uninteresting prate, and formalities that mean nothing, and on that account is sometimes found a little tedious and fatiguing.

The most eminent writers of our own country, and even of foreign parts, have paid their tribute to the transcendent talents of Mr Richardson, whose works have been published in almost every language and country of Europe. They have been greatly admired, notwithstanding every dissimilitude of manners, or every disadvantage of translation. M. Diderot, a late celebrated French author, speaking of the means employed to move the passions, in his *Essay on Dramatic Poetry*, mentions Richardson as a perfect master of that art: "How striking (says he), how pathetic, are his descriptions! His personages, though silent, are alive before me; and of those who speak, the actions are still more affecting than the words."—The famous John-James Rousseau, speaking, in his letter to M. d'Alembert, of the novels of Richardson, asserts, "that nothing was ever written equal to, or even approaching them, in any language."—Mr Aaron Hill calls his *Pamela* a "delightful nursery of virtue."—Dr Warton speaks thus of *Clementina*: "Of all representations of madness, that of *Clementina*, in the *History of Sir Charles Grandison*,
VOL. XVI. Part I.

is the most deeply interesting. I know not whether even the madness of Lear is wrought up, and expressed, by so many little strokes of nature and passion. It is absolute pedantry to prefer and compare the madness of Orestes in Euripides to this of *Clementina*."—Dr Johnson, in his Introduction to the 97th number of the *Rambler*, which was written by Mr Richardson, observes, that the reader was indebted for that day's entertainment to an author, "from whom the age has received greater favours, who has enlarged the knowledge of human nature, and taught the passions to move at the command of virtue;" and, in his *Life of Rowe*, he says, "The character of Lothario seems to have been expanded by Richardson into that of Lovelace; but he has excelled his original in the moral effect of the fiction. Lothario, with gaiety which cannot be hated, and bravery which cannot be despised, retains too much of the spectator's kindness. It was in the power of Richardson alone to teach us at once esteem and detestation; to make virtuous resentment overpower all the benevolence which wit, and elegance, and courage, naturally excite; and to lose at last the hero in the villain."—Dr Young very pertinently observed, that Mr Richardson, with the mere advantages of nature, improved by a very moderate progress in education, struck out at once, and of his own accord, into a new province of writing, in which he succeeded to admiration. And what is more remarkable, that he not only began, but finished, the plan on which he set out, leaving no room for any one after him to render it more complete: and that not one of the various writers that have ever since attempted to imitate him, have in any respect equalled, or at all approached near him. This kind of romance is peculiarly his own; and "I consider him (continues the Doctor) as a truly great natural genius; as great and supereminent in his way as Shakespeare and Milton were in theirs."

RICHARDSON (Jonathan), a celebrated painter of heads, was born about the year 1665, and against his inclination was placed by his father-in-law apprentice to a scrivener, with whom he lived six years; when obtaining his freedom by the death of his master, he followed the bent of his disposition, and at 20 years old became the disciple of Riley; with whom he lived four years, whose niece he married, and of whose manner he acquired enough to maintain a solid and lasting reputation, even during the lives of Kneller and Dahl; and to remain at the head of the profession when they went off the stage.

There is strength, roundness, and boldness in his colouring; but his men want dignity, and his women grace. The good sense of the nation is characterised in his portraits. You see he lived in an age when neither enthusiasm nor servility were predominant. Yet with a pencil so firm, possessed of a numerous and excellent collection of drawings, full of the theory, and profound in reflections on his art, he drew nothing well below the head, and was void of imagination. His attitudes, draperies, and back-grounds, are totally insipid and unmeaning; so ill did he apply to his own practice the sagacious rules and hints he bestowed on others. Though he wrote with fire and judgment, his paintings owed little to either. No man dived deeper into the inexhaustible stores of Raphael, or was more smitten with the native lustre of Vandyck. Yet though capable
G g

Walpole's
Anecdotes of
Painting in
England.

Richardson. ble of tasting the elevation of the one and the elegance of the other, he could never contrive to see with their eyes, when he was to copy nature himself. One wonders that he could comment their works so well, and imitate them so little.

He quitted business himself some years before his death; but his temperance and virtue contributed to protract his life to a great length in the full enjoyment of his understanding, and in the felicity of domestic friendship. He had had a paralytic stroke that affected his arm, yet never disabled him from his customary walks and exercise. He had been in St James's Park, and died suddenly at his house in Queen's-square on his return home, May 28. 1745, when he had passed the 80th year of his age. He left a son and four daughters, one of whom was married to his disciple Mr Hudson, and another to Mr Grigson an attorney. The taste and learning of the son, and the harmony in which he lived with his father, are visible in the joint works they composed. The father in 1719 published two discourses: 1. An Essay on the whole Art of Criticism as it relates to Painting; 2. An Argument in behalf of the Science of a Connoisseur; bound in one volume octavo. In 1722 came forth An Account of some of the statues, bas-reliefs, drawings, and pictures, in Italy, &c. with Remarks by Mr Richardson, senior and junior. The son made the journey; and from his notes, letters, and observations, they both at his return compiled this valuable work. As the father was a formal man, with a slow, but loud and sonorous voice, and, in truth, with some affectation in his manner; and as there is much singularity in his style and expression, these peculiarities (for they were scarcely foibles) struck superficial readers, and between the laughs and the envious the book was much ridiculed. Yet both this and the former are full of matter, good sense, and instruction: and the very quaintness of some expressions, and their laboured novelty, show the difficulty the author had to convey mere visible ideas through the medium of language. Those works remind one of Cibber's inimitable treatise on the stage: when an author writes on his own profession, feels it profoundly, and is sensible his readers do not, he is not only excusable, but meritorious, for illuminating the subject by new metaphors or bolder figures than ordinary. He is the coxcomb that sneers, not he that instructs, in appropriated diction.

If these authors were censured when conversant within their own circle, it was not to be expected that they would be treated with milder indulgence when they ventured into a sister region. In 1734, they published a very thick octavo, containing explanatory notes and remarks on Milton's Paradise Lost, with the life of the author, and a discourse on the poem. Again were the good sense, the judicious criticisms, and the sentiments that broke forth in this work, forgotten in the singularities that distinguish it. The father having said in apology for being little conversant in classic literature, that he had looked into them through his son, Hogarth, whom a quibble could furnish with wit, drew the father peeping through the nether end of a telescope, with which his son was perforated at a Virgil aloft on a shelf. Yet how forcibly Richardson entered into the spirit of his author, appears from his comprehensive expression, that *Milton was an ancient, born*

two thousand years after his time. Richardson, however, was as incapable of reaching the sublime or harmonious in poetry, as he was in painting, though so capable of illustrating both. Some specimens of verse that he has given us here and there in his works, excite no curiosity for more, though he informs us in his Milton, that if painting was his wife, poetry had been his secret concubine. It is remarkable, that another commentator of Milton has made the same confession,

— *Sunt & mihi carmina, me quoque dicunt
Vatem pastores* —

says Dr Bentley. Neither the doctor nor the painter add *sed non ego credulus illis*, though all their readers are ready to supply it for both. Besides his pictures and commentaries, we have a few etchings by his hand, particularly two or three of Milton, and his own head. The sale of his collection of drawings, in February 1747, lasted 18 days, and produced about 2060 l. his pictures about 700 l. Hudson his son-in-law bought many of the drawings.

RICHELET (Cæsar Peter), a French writer, born in 1631 at Chemin in Champagne. He was the friend of Patru and Ablancourt; and like them applied himself to the study of the French language with success. He compiled a dictionary of that language, full of new and useful remarks; but exceptionable, as containing many satirical reflections and obscenities. The best edition is that of Lyons, 3 vols folio, 1728. He also collected a small dictionary of rhymes, and composed some other pieces in the grammatical and critical way. He died in 1698.

RICHESS, a word used always in the plural number, means wealth, money, possession, or a splendid sumptuous appearance. When used to express the fortune of private persons, whether patrimonial or acquired, it signifies *opulencia*; term which expresses not the enjoyment, but the possession, of numerous superfluities.—The riches of a state or kingdom expresses the produce of industry, of commerce, of different incorporated bodies, of the internal and external administration of the principal members of which the society is composed, &c.

Our Saviour says, that it is more easy for a camel to go through the eye of a needle, than for a rich man to enter the kingdom of heaven; and we find, in fact, that riches frequently bring along with them a degree of inattention, lukewarmness, and irreligion, such as sufficiently confirms the divine assertion; which is merely a general truth, and which by no means asserts the absolute impossibility of being virtuous and rich at the same time. For as the ancient philosophers wisely taught, riches, considered in themselves, and abstractedly from the bad purposes to which they may be applied, are not necessarily incompatible with virtue and wisdom. They are indeed absolutely indifferent; in good hands they will be useful, and promote the cause of truth, virtue, and humanity; and in bad hands they are the source of much mischief; on the one hand they confer the power of doing much good, and on the other they are equally powerful in doing ill.

To men, however, whose principles of virtue are not sufficiently founded, riches are unquestionably a dangerous and seducing bait; and as the ancients rightly taught, they are to the greatest number of men, in an infinite

Riches. Infinite variety of circumstances, a powerful obstacle to the practice of moral virtues, to the progress of truth, and a weight which prevents them from rising to that degree of knowledge and perfection of which human nature is capable. They multiply without ceasing the occasions of vice, by the facility which they give to satisfy a multitude of irregular passions, and to turn at length those who are attached to them from the road of virtue, and from the desire of inquiring after truth.

It is this which Seneca means to express, when he says, "that riches in a vast number of cases have been a great obstacle to philosophy; and that, to enjoy freedom of mind necessary for study, a man must live in poverty, or as if he were poor. Every man (adds he) who wishes to lead a pleasant, tranquil, and secure life, must avoid, as much as possible, the deceitfulness of riches, which are a bait with which we allow ourselves to be taken as in a snare, without afterwards having the power to extricate ourselves, being so much the more unhappy, that we believe we possess them, while, on the contrary, they tyrannize over us." *Senec. Epist. 17. and Epist. 8.*

"The wise man (says the same author in another place) does not love riches to excess, but he would not choose wholly to divest himself of them; he does not receive them into his soul, but into his house; he is careful of them, and employs them for the purpose of opening a wide field for virtue, and of making it appear in all its splendor. Who can doubt that a wise man has not more occasions of displaying the elevation and greatness of his mind when he is possessed of riches than when he labours under indigence, since, in the last condition, he can exercise only one virtue, namely, resignation; whereas, riches give him an opportunity of displaying, in their greatest lustre, the virtues of temperance, liberality, diligence, regularity, and magnificence. There is no occasion, then, to prohibit philosophers from the use of wealth, or to condemn wisdom to poverty. The philosopher may possess the greatest riches, provided he has not employed force or shed blood in acquiring them; provided he has not gained them by unjust or illegal means; in a word, provided the use which he makes of them be as pure as the source from which they were derived, and no person (the envious excepted) regretting his possession; he will not refuse the kindness of fortune, and will enjoy, without shame or pride, the wealth acquired by honest means; he will have more reason to glory, if, after exposing his riches to the view of the whole world, he can desire any person to carry away the reward of treachery or the fruits of oppression. If, after these words, his riches continue undiminished, this man is truly great, and worthy to be rich. If he has not allowed to enter into his possession the smallest piece of money gained by unwarrantable means, neither will he refuse the greatest riches, which are the blessings of fortune, and the fruit of virtue: if he can be rich, he will choose to be so, and he shall have riches; but he will regard them as blessings of uncertain possession, and of which he may be every moment deprived; he will not permit them to be a load to himself or to others; he will give them to the good, or to those whom he would make good; but he will give them with the nicest wisdom, taking care always to distribute them to the most

worthy, and to those who remember that they must give an account, as well of the wealth which they receive from heaven, as of the purposes to which it is applied." *Senec. de Vita Beata, cap. 21, 22, & 23.*

RICHLIEU (John Armand du Pleffis de), cardinal of Richlieu and Fronfac, bishop of Lucon, &c. was born at Paris in 1585. He was of excellent parts; and at the age of 22 had the address to obtain a dispensation to enjoy the bishopric of Lucon in 1607. Returning into France, he applied himself in a particular manner to the function of preaching; and his reputation this way procured him the office of almoner to the queen Mary de Medicis. His abilities in the management of affairs advanced him to be secretary of state in 1616; and the king soon gave him the preference to all his other secretaries. The death of the marquis d'Ancre having produced a revolution in state affairs, Richlieu retired to Avignon; where he employed himself in composing books of controversy and piety. The king having recalled him to court, he was made a cardinal in 1622; and, two years after, first minister of state, and grand master of the navigation. In 1626, the isle of Rhée was preserved by his care, and Rochelle taken, having stopped up the haven by that famous dyke which he ordered to be made there. He accompanied the king to the siege of Casal, and contributed not a little to the raising of it in 1629. He also obliged the Huguenots to the peace at Alets, which proved the ruin of that party; he took Pamerol, and succoured Casal besieged by Spinola. In the mean time the nobles found fault with his conduct, and persuaded the king to discard him. The cardinal, for his part, was unmoved with it; and by his reasonings overthrew what was thought to be determined against him; so that, instead of being disgraced, he from that moment became more powerful than ever. He punished all his enemies in the same manner as they would have had him suffer; and the day which produced this event, so glorious to cardinal Richlieu, was called the *day of dupes*. This able minister had from thenceforwards an ascendancy over the king's mind; and he now resolved to humble the excessive pride of the house of Austria. For that purpose he concluded a treaty with Gustaphus Adolphus king of Sweden, for carrying the war into the heart of Germany. He also entered into a league with the duke of Bavaria; secured Lorrain; raised a part of the princes of the empire against the emperor; treated with the Dutch to continue the war against Spain; favoured the Catalans and Portuguese till they shook off the Spanish yoke; and, in short, took so many different measures, that he accomplished his design; and after having carried on the war with success, was thinking of concluding it by a peace, when he died at Paris on the 4th of December 1642, aged 58. He was interred in the Sorbonne, where a magnificent mausoleum is erected to his memory. This great politician made the arts and sciences flourish; formed the botanical garden at Paris, called the *king's garden*; founded the French academy; established the royal printing-house; erected the palace afterwards called *Le Palais Royal*, which he presented to the king; and rebuilt the Sorbonne with a magnificence that appears truly royal. Besides his books of controversy and piety, there go under the name of this minister, *A Journal*, in 2 vols 12mo; and a *Political Testament*, in 12mo; all treating of politics and state affairs. Cardinal

Ricinus.

nal Mazarine pursued Richlieu's plan, and completed many of the schemes which he had begun, but left unfinished.

N. London
Medical
Journal,
vol. viii.
part iii.
p. 278.
Plate
ccccxxvii.

RICINUS, or **PALMA CHRISTI**, in botany: A genus of the monodelphia order, belonging to the monoecea class of plants; and in the natural method ranking under the 38th order, *Tricocca*. The male calyx is quinquepartite; there is no corolla; the stamina numerous. The female calyx is tripartite; there is no corolla, but three bifid styles, with a trilocular capsule, and a single seed. There are three species, of which the most remarkable is the communis, or common palma Christi. This tree is of speedy growth, as in one year it arrives at its full height, which seldom exceeds 20 feet. The trunk is subligneous; the pith is large; the leaves broad and palmated; the flower spike is simple, and thickly set with yellow blossoms in the shape of a cone; the capsules are triangular and prickly, containing three smooth gray mottled seeds. When the bunches begin to turn black, they are gathered, dried in the sun, and the seeds picked out. They are afterwards put up for use as wanted, or for exportation.

Castor oil is obtained either by expression or by decoction. The first method is practised in England; the latter in Jamaica. It is common first to parch the nuts or seeds in an iron pot over the fire; but this gives the oil an empyreumatic taste, smell, and colour; and it is best prepared in this manner: A large iron pot or boiler is first prepared, and half filled with water. The nuts are then beaten in parcels in deep wooden mortars, and after a quantity is beaten it is thrown into the iron vessel. The fire is then lighted, and the liquor is gently boiled for two hours, and kept constantly stirred. About this time the oil begins to separate, and swims on the top, mixed with a white froth, and is skimmed off till no more rises. The skimmings are heated in a small iron pot, and strained through a cloth. When cold, it is put up in jars or bottles for use.

Castor oil, thus made, is clear and well flavoured, and if put into proper bottles will keep sweet for years. The expressed castor oil soon turns rancid, because the mucilaginous and acrid parts of the nut are squeezed out with the oil. On this account the preference is given to well prepared oil by decoction. An English gallon of the seeds yield about two pounds of oil, which is a great proportion.

Before the disturbances in America, the planters imported train oil for lamps and other purposes about sugar works. It is now found that the castor oil can be procured as cheap as the fish oil of America: it burns clearer, and has not any offensive smell. This oil, too, is fit for all the purposes of the painter, or for the apothecary in ointments and plasters. As a medicine, it purges without stimulus, and is so mild as to be given to infants soon after birth, to purge off the meconium. All oils are noxious to insects, but the castor oil kills and expels them. It is generally given as a purge after using the cabbage bark some days. In constipation and belly-ach this oil is used with remarkable success. It sits well on the stomach, allays the spasm, and brings about a plentiful evacuation by stool, especially if at the same time fomentations, or the warm bath, are used. — Belly-ach is at present less frequent in Jamaica than formerly, owing to several causes. The inhabitants, in general, live better, and drink better liquors; but the

excessive drinking of new rum still makes it frequent amongst soldiers, sailors, and the lower order of white people. It has been known to happen too from visceral obstructions after intermittents, or marsh fevers, in Jamaica.

The ricinus Americanus grows as tall as a little tree, and is so beautiful that Millar says it deserves a place in every curious garden, and he planted it himself at Chelsea. It expands into many branches; the leaves are sometimes two feet in diameter, and the stem as large as a middle-sized broom staff; towards the top of the branch it has a cluster of flowers, something resembling a bunch of grapes; the flowers are small and staminate, but on the body of the plant grow bunches of rough triangular husks, each containing three speckled seeds, generally somewhat less than horse beans; the shell is brittle, and contains white kernels of a sweet, oily, and nauseous taste. From this kernel the oil is extracted, and if the medicine should become officinal, the seeds may be imported at a reasonable rate, as the plant grows wild and in great plenty in all the British and French American islands. See *OLEUM Palmae Christi*. Of the ricinus communis there are a great many varieties; all of them fine majestic plants, annual, or at most biennial, in this country; but in their native soil they are said to be perennial both in root and stem. They are propagated by seeds sown on a hot-bed, and require the same treatment as other tender exotics.

RICKETS, in medicine. See there, n° 347.

RICOCHET, in gunnery, is when guns, howitzers, or mortars, are loaded with small charges, and elevated from 5 to 12 degrees, so as to fire over the parapet, and the shot or shell rolls along the opposite rampart: it is called *ricochet-firing*, and the batteries are likewise called *ricochet-batteries*. This method of firing was first invented by M. Belidor, and first used at the siege of Ath in 1697. This mode of firing out of mortars was first tried in 1723 at the military school at Strasbourg, and with success. At the battle of Rossbach, in 1757, the king of Prussia had several 6-inch mortars made with trunnions, and mounted on travelling-carriages, which fired obliquely on the enemy's lines, and amongst their horse, loaded with 8 ounces of powder, and at an elevation of one degree 15 minutes, which did great execution; for the shells rolling along the lines, with burning fuzes, made the stoutest of the enemy not wait for their bursting.

RICOTIA, in botany: A genus of the siliquosa order, belonging to the tetradynamia class of plants; and in the natural method ranking under the 39th order, *Siliquosa*. The siliqua is unilocular, oblong, and compressed, with plain valves.

RIDGE, in agriculture, a long piece of rising land between two furrows. See *AGRICULTURE*, n° 111.

RIDGLING, or **RIDGEL**, among farriers, &c. the male of any beast that has been but half-gelt.

RIDICULE, in matters of literature, is that species of writing which excites contempt with laughter.

The *ridiculous*, however, differs from the *risible*, (see *RISIBLE*.) A risible object produceth an emotion of laughter merely: a ridiculous object is improper as well as risible; and produceth a mixed emotion, which is vented by a laugh of derision or scorn.

Burlesque, though a great engine of ridicule, is not confined to that subject; for it is clearly distinguishable into burlesque that excites laughter merely, and burlesque

Rickets

Ridicule

Plate

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Ridicule. burlesque that provokes derision or ridicule. A grave subject in which there is no impropriety, may be brought down by a certain colouring so as to be risible; which is the case of *Virgil Travestie*, and also the case of the *Secchia Rapita*; the authors laugh first, in order to make their readers laugh. The *Lutrin* is a burlesque poem of the other sort, laying hold of a low and trifling incident, to expose the luxury, indolence, and contentious spirit of a set of monks. Boileau, the author, gives a ridiculous air to the subject, by dressing it in the heroic style, and affecting to consider it as of the utmost dignity and importance. In a composition of this kind, no image professedly ludicrous ought to find quarter, because such images destroy the contrast; and accordingly the author shows always the grave face, and never once betrays a smile.

Elements of Criticism.

Though the burlesque that aims at ridicule produces its effects by elevating the style far above the subject, yet it has limits beyond which the elevation ought not to be carried: the poet, consulting the imagination of his readers, ought to confine himself to such images as are lively and readily apprehended: a strained elevation, soaring above an ordinary reach of fancy, makes not a pleasant impression: the reader, fatigued with being always upon the stretch, is soon disgusted; and, if he persevere, becomes thoughtless and indifferent.—Further, a fiction gives no pleasure unless it be painted in colours so lively as to produce some perception of reality; which never can be done effectually where the images are formed with labour or difficulty. For these reasons, we cannot avoid condemning the *Batrachomyomachia*, said to be the composition of Homer: it is beyond the power of imagination to form a clear and lively image of frogs and mice acting with the dignity of the highest of our species; nor can we form a conception of the reality of such an action, in any manner so distinct as to interest our affections even in the slightest degree.

The *Rape of the Lock* is of a character clearly distinguishable from those now mentioned; it is not properly a burlesque performance, but what may rather be termed an *heroic-comical poem*: it treats a gay and familiar subject with pleasantry, and with a moderate degree of dignity: the author puts not on a mask like Boileau, nor professes to make us laugh like Tassoni. The *Rape of the Lock* is a genteel species of writing, less strained than those mentioned; and is pleasant or ludicrous without having ridicule for its chief aim; giving way, however, to ridicule where it arises naturally from a particular character, such as that of Sir Plume. Addison's *Spectator**, upon the exercise of the fan, is extremely gay and ludicrous, resembling in its subject the *Rape of the Lock*.

There remains to show, by examples, the manner of treating subjects so as to give them a ridiculous appearance.

Il ne dit jamais, je vous donne, mais, je vous prete le bon jour. *Moliere.*

Orleans. I know him to be valiant.

Constable. I was told that by one that knows him better than you.

Orleans. What's he?

Constable. Marry, he told me so himself; and he said, he car'd not who knew it. *Henry V. Shakespeare.*

He never broke any man's head but his own, and that was against a post when he was drunk. *Ibid.*

Millamont. Sententious Mirabel! prithee don't look with that violent and inflexible wise face, like Solomon at the dividing of the child in an old tapestry-hanging. *Way of the World.*

A true critic, in the perusal of a book, is like a dog at a feast, whose thoughts and stomach are wholly set upon what the guests sling away, and consequently is apt to snarl most when there are the fewest bones.

Tale of a Tub.

In the following instances, the ridicule arises from absurd conceptions in the persons introduced.

Mascarille. Te souvient-il, vicomte, de cette demi-lune, que nous emportames sur les ennemis au siege d'Afras?

Jodelet. Que veux-tu dire avec ta demi-lune? c'etoit bien une lune tout entiere.

Moliere, les Precieuses Ridicules, sc. 11.

Slander. I came yonder at Eaton to marry Mrs Anne Page; and she's a great lubberly boy.

Page. Upon my life then you took the wrong—

Slander. What need you tell me that? I think so when I took a boy for a girl: if I had been married to him, for all he was in woman's apparel, I would not have had him.

Merry Wives of Windsor.

Valentine. Your blessing, Sir.

Sir Sampson. You've had it already, Sir: I think I sent it you to-day in a bill for four thousand pound; a great deal of money, brother Foresight.

Foresight. Ay, indeed, Sir Sampson, a great deal of money for a young man; I wonder what he can do with it.

Love for Love, act 2. sc. 7.

Millamont. I nauseate walking; 'tis a country diversion; I lothe the country, and every thing that relates to it.

Sir Wilfull. Indeed, hah! look ye, look ye, you do? nay, 'tis like you may—here are choice of pastimes here in town, as plays and the like; that must be confess'd, indeed.

Millamont. Ah l'etourdie! I hate the town too.

Sir Wilfull. Dear heart, that's much—hah! that you should hate 'em both! hah! 'tis like you may; there are some can't relish the town, and others can't away with the country—'tis like you may be one of these, Cousin.

Way of the World, act 4. sc. 4.

Lord Froth. I assure you, Sir Paul, I laugh at nobody's jests but my own, or a lady's: I assure you, Sir Paul.

Brikt. How? how, my Lord? what, affront my wit? Let me perish, do I never say any thing worthy to be laugh'd at?

Lord Froth. O foy, don't misapprehend me, I don't say so, for I often smile at your conceptions. But there is nothing more unbecoming a man of quality than to laugh; 'tis such a vulgar expression of the passions! every body can laugh. Then especially to laugh at the jest of an inferior person, or when any body else of the same quality does not laugh with one; ridiculous! To be pleas'd with what pleases the crowd! Now, when I laugh I always laugh alone.

Double Dealer, act 1. sc. 4.

So.

Ridicule.

So sharp-sighted is pride in blemishes, and so willing to be gratified, that it takes up with the very slightest improprieties: such as a blunder by a foreigner in speaking our language, especially if the blunder can bear a sense that reflects on the speaker:

Quickly. The young man is an honest man.

Caius. What shall de honest man do in my closet? dere is no honest man dat shall come in my closet.

Merry Wives of Windsor.

Love speeches are finely ridiculed in the following passage,

Quoth he, My faith as adamantine,
As chains of destiny, I'll maintain;
True as Apollo ever spoke,
Or oracle from heart of oak;
And if you'll give my flame but vent,
Now in close hugger-mugger pent,
And shine upon me but benignly,
With that one and that other pigsnay,
The sun and day shall sooner part
Than love, or you, shake off my heart;
The sun, that shall no more dispense
His own, but your bright influence:
I'll carve your name on barks of trees,
With true love-knots and flourishes;
That shall infuse eternal spring,
And everlasting flourishing:
Drink every letter on't in slum,
And make it brisk champaign become.
Where'er you tread, your foot shall set
The primrose and the violet;
All spices, perfumes, and sweet powders,
Shall borrow from your breath their odours;
Nature her charter shall renew
And take all lives of things from you;
The world depend upon your eye,
And, when you frown upon it, die.
Only our loves shall still survive,
New-worlds and natures to out-live;
And, like to herald's moons, remain
All crescents, without change or wane.

Hudibras, part 2. canto 1.

Those who have a talent for ridicule, which is seldom united with a taste for delicate and refined beauties, are quick-sighted in improprieties; and these they eagerly grasp, in order to gratify their favourite propensity. Persons galled are provoked to maintain that ridicule is improper for grave subjects. Subjects really grave are by no means fit for ridicule; but then it is urged against them, that, when called in question whether a certain subject be really grave, ridicule is the only means of determining the controversy. Hence a celebrated question, Whether ridicule be or be not a test of truth?

On one side, it is observed, that the objects of ridicule are falsehood, incongruity, impropriety, or turpitude of certain kinds: but as the object of every excited passion must be examined by reason, before we can determine whether it be proper or improper; so ridicule must, apparently at least, establish the truth of the improprieties designed to excite the passion of contempt. Hence it comes in to the aid of argument and reason, when its impressions on the imagination are consistent with the nature of things; but when it strikes the fancy

and affections with fictitious images, it becomes the instrument of deceit. But however ridicule may impress the idea of apparent turpitude or falsehood in the imagination, yet still reason remains the supreme judge; and thus ridicule can never be the final test or touchstone of truth and falsehood.

On the other side, it is contended that ridicule is not a subject of reasoning, but of sense or taste; (see and compare the articles *RISIBLE* and *CONGRUITY*). Stating the question, then, in more accurate terms, Whether the sense of ridicule be the proper test for distinguishing ridiculous objects from what are not so? they proceed thus: No person doubts that our sense of beauty is the true test of what is beautiful; and our sense of grandeur, of what is great or sublime. Is it more doubtful whether our sense of ridicule be the true test of what is ridiculous? It is not only the true test, but indeed the only test; for this subject comes not, more than beauty or grandeur, under the province of reason. If any subject, by the influence of fashion or custom, have acquired a degree of veneration to which naturally it is not entitled, what are the proper means for wiping off the artificial colouring, and displaying the subject in its true light? A man of true taste sees the subject without disguise; but if he hesitate, let him apply the test of ridicule, which separates it from its artificial connections, and exposes it naked with all its native improprieties.—But it is urged, that the gravest and most serious matters may be set in a ridiculous light. Hardly so; for where an object is neither risible nor improper, it lies not open in any quarter to an attack from ridicule.

RIDING, in general, signifies the being carried along on any vehicle.

RIDING on horseback. See *HORSEMANSHIP*.

RIDING, in medicine. During this exercise all the viscera are shaken, and pressed against each other; at the same time the pure air acts with a greater force on the lungs. Weakly persons, or those whose stomachs are infirm, should, however, be cautious of riding before their meals are somewhat digested.

RIDING, in naval affairs, is the state of a ship's being retained in a particular station, by means of one or more cables with their anchors, which are for this purpose sunk into the bottom of the sea, &c. in order to prevent the vessel from being driven at the mercy of the wind or current.—A rope is said to *ride*, when one of the turns by which it is wound about the capstern or windlass lies over another, so as to interrupt the operation of heaving.

RIDING Athwart, the position of a ship which lies across the direction of the wind and tide, when the former is so strong as to prevent her from falling into the current of the latter.

RIDING between the Wind and Tide, the situation of a vessel at anchor, when the wind and tide act upon her in direct opposition, in such a manner as to destroy the effort of each other upon her hull; so that she is in a manner balanced between their reciprocal force, and rides without the least strain on her cables. When a ship does not labour heavily, or feel a great strain when anchored in an open road or bay, she is said to ride easy. On the contrary, when she pitches violently into the sea, so as to strain her cables, masts, or hull, it is called *riding hard*, and the vessel is termed a *bad roader*.

Riding.

Riding.

roadster. A ship is rarely said to *ride* when she is fastened at both the ends, as in a harbour or river, that situation being comprehended in the article *MOORING*.

RIDING, a district visited by an officer.—Yorkshire is divided into three ridings, viz. the east, west, and north ridings. In all indictments in that county, both the town and riding must be expressed.

RIDING, as connected with gardening, and susceptible of embellishment. See *GARDENING*.

Observations
on Modern
Gardening,
p. 227, &c.

Decorations
of a
riding.

A riding, though in extent differing so widely from a garden, yet agrees with it in many particulars: for, exclusive of that community of character which results from their being both improvements, and both destined to pleasure, a closer relation arises from the property of a riding, to extend the idea of a seat, and appropriate a whole country to the mansion; for which purpose it must be distinguished from common roads, and the marks of distinction must be borrowed from a garden. Those which a farm or a park can supply are faint and few; but whenever circumstances belonging to a garden occur, they are immediately received as evidence of the domain. The species of the trees will often be decisive: plantations of firs, whether placed on the sides of the way, or in clumps or woods in the view, denote the neighbourhood of a seat: even limes and horse-chestnuts are not indifferent; for they have always been frequent in improvements, and rare in the ordinary scenes of cultivated nature. If the riding be carried through a wood, the shrubs, which for their beauty or their fragrance have been transplanted from the country into gardens, such as the sweet-briar, the viburnum, the euonymus, and the wood-bine, should be encouraged in the underwood; and to these may be added several which are still peculiar to shrubberies, but which might easily be transferred to the wildest coverts, and would require no further care.

Where the species are not, the disposition may be particular, and any appearance of design is a mark of improvement. A few trees standing out from a hedge-row, raise it to an elegance above common rusticity: and still more may be done by clumps in a field; they give it the air of a park. A close lane may be decorated with plantations in all the little vacant spaces: and even the groups originally on the spot (whether it be a wood, a field, or a lane), if properly selected, and those only left which are elegant, will have an effect: though every beauty of this kind may be found in nature, yet many of them are seldom seen together, and never unmixed. The number and the choice are symptoms of design.

Another symptom is variety. If the appendages of the riding be different in different fields, if in a lane, or a wood, some distinguishing circumstance be provided for every bend; or when, carried over an open exposure, it winds to several points of view; if this be the conduct throughout, the intention is evident, to amuse the length of the way: variety of ground is also a characteristic of a riding, when it seems to have proceeded from choice; and pleasure being the pursuit, the changes of the scene both compensate and account for the circuit.

But a part undistinguished from a common road, succeeding to others more adorned, will by the contrast alone be sometimes agreeable; and there are beauties frequent in the high-way, and almost peculiar to it,

which may be very acceptable in a riding: a green lane is always delightful; a passage winding between thickets of brambles and briars, sometimes with sometimes without a little spring-wood rising amongst them, or a cut in a continued sweep through the furze of a down or the fern of a heath, is generally pleasant. Nor will the character be absolutely lost in the interruption, it will soon be resumed, and never forgotten; when it has been once strongly impressed, very slight means will preserve the idea.

Simplicity may prevail the whole length of the way when the way is all naturally pleasant, but especially if it be a communication between several spots, which in character are raised above the rest of the country: A fine open grove is unusual, except in a park or a garden; it has an elegance in the disposition which cannot be attributed to accident, and it seems to require a degree of preservation beyond the care of mere husbandry. A neat railing on the edge of a steep which commands a prospect, alone distinguishes that from other points of view. A building is still more strongly characteristic: it may be only ornamental, or it may be accommodated to the reception of company; for though a place to alight at interrupts the range of a riding, yet, as the object of an airing, it may often be acceptable. A small spot which may be kept by the labour of one man, inclosed from the fields, and converted into a shrubbery or any other scene of a garden, will sometimes be a pleasing end to a short excursion from home: nothing so effectually extends the idea of a seat to a distance; and not being constantly visited, it will always retain the charms of novelty and variety.

When a riding is carried along a high road, a kind of property may in appearance be claimed even there, by planting on both sides trees equidistant from each other, to give it the air of an approach: regularity intimates the neighbourhood of a mansion. A village therefore seems to be within the domain, if any of the inlets to it are avenues: other formal plantations about it, and still more trivial circumstances, when they are evidently ornamental, sometimes produce and always corroborate such an effect; but even without raising this idea, if the village be remarkable for its beauty, or only for its singularity, a passage through it may be an agreeable incident in a riding.

The same ground which in the fields is no more than rough, often seems to be romantic when it is the site of a village; the buildings and other circumstances mark and aggravate the irregularity. To strengthen this appearance, one cottage may be placed on the edge of a steep, and some winding steps of unhewn stone lead up to the door; another in a hollow, with all its little appurtenances hanging above it. The position of a few trees will sometimes answer the same purpose; a foot-bridge here and there for a communication between the sides of a narrow dip, will add to the character; and if there be any rills, they may be conducted so as greatly to improve it.

A village which has not these advantages of ground, may, however, be beautiful; it is distinguished by its elegance, when the larger intervals between the houses are filled with open groves, and little clumps are introduced upon other occasions. The church often is, it generally may be, made a picturesque object. Even the cottages may be neat and sometimes grouped

Riding.

² *Riding.* with thickets. If the place be watered by a stream, the crossings may be in a variety of pleasing designs; and if a spring rise, or only a well for common use be sunk by the side of the way, a little covering over it may be contrived which shall at the same time be simple and pretty.

There are few villages which may not easily be rendered agreeable. A small alteration in a house will sometimes occasion a great difference in the appearance. By the help of a few trifling plantations, the objects which have a good effect may be shown to advantage, those which have not may be concealed, and such as are similar be disguised. And any form which offends the eye, whether of ground, of trees, or of buildings, may sometimes be broken by the slightest circumstances, by an advanced paling, or only by a bench. Variety and beauty, in such a subject, are rather the effects of attention than expence.

³ *Of the buildings designed for objects in a riding.* But if the passage through the village cannot be pleasant; if the buildings are all alike, or stand in unmeaning rows and similar situations; if the place furnishes no opportunities to contrast the forms of dwellings with those of out-houses; to introduce trees and thickets; to interpose fields and meadows; to mix farms with cottages; and to place the several objects in different positions: yet on the outside even of such a village there certainly is room for wood; and by that alone the whole may be grouped into a mass, which shall be agreeable when skirted by a riding; and still more so when seen from a distance. The separate farms in the fields, also, by planting some trees about them, or perhaps only by managing those already on the spot, may be made very interesting objects; or if a new one is to be built, beauty may be consulted in the form of the house, and the disposition of its appurtenances. Sometimes a character not their own, as the semblance of a castle or an abbey, may be given to them; they will thereby acquire a degree of consideration, which they cannot otherwise be entitled to: and objects to improve the views are so important to a riding, that buildings must sometimes be erected for that purpose only: but they should be such as by an actual effect adorn or dignify the scene; not those little slight deceptions which are too well known to succeed, and have no merit if they fail: for though a fallacy sometimes contributes to support a character, or suggests ideas to the imagination, yet in itself it may be no improvement of a scene; and a bit of turret, the tip of a spire, and the other ordinary subjects of these frivolous attempts, are so insignificant as objects, that whether they are real or fictitious is almost a matter of indifference.

⁴ *Of a garden similar in character to a riding.* The same means by which the prospects from a riding are improved, may be applied to those from a garden; though they are not essential to its character, they are important to its beauty; and wherever they abound, the extent only of the range which commands them, determines whether they shall be seen from a riding or a garden. If they belong to the latter, that assumes in some degree the predominant properties of the former, and the two characters approach

Riding. very near to each other: but still each has its peculiarities. Progress is a prevailing idea in a riding; and the pleasantness of the way is, therefore, a principal consideration: but particular spots are more attended to in a garden; and to them the communications ought to be subordinate; their direction must be generally accommodated, their beauties sometimes sacrificed to the situation and the character of the scenes they lead to; an advantageous approach to these must be preferred to an agreeable line for the walk; and the circumstances which might otherwise become it are misplaced, if they anticipate the openings: it should sometimes be contrasted to them; be retired and dark if they are splendid or gay, and simple if they are richly adorned. At other times it may burst unexpectedly out upon them; not on account of the surprise, which can have its effect only once; but the impressions are stronger by being sudden; and the contrast is enforced by the quickness of the transition.

In a riding, the scenes are only the amusements of the way, through which it proceeds without stopping: in a garden they are principal; and the subordination of the walk raises their importance. Every art, therefore, should be exerted to make them seem parts of the place. Distant prospects cannot be so; and the alienation does not offend us; we are familiarized to it; the extent forbids every thought of a closer connection; and if a continuation be preserved between them and the points which command them, we are satisfied. But *home-views* suggest other ideas; they appear to be within our reach: they are not only beautiful in prospect, and we can perceive that the spots are delightful; but we wish to examine, to inhabit, and to enjoy them. Every apparent impediment to that gratification is a disappointment; and when the scenes begin beyond the opening, the consequence of the place is lowered; nothing within it engages our notice: it is an exhibition only of beauties, the property of which does not belong to it; and that idea, though indifferent in a riding, which is but a passage, is very disadvantageous to such a residence as a garden. To obviate such an idea, the points of view should be made important; the objects within be appendages to those without; the separations be removed or concealed; and large portions of the garden be annexed to the spots which are contiguous to it. The ideal boundary of the place is then carried beyond the scenes which are thus appropriated to it; and the wide circuit in which they lie, and the different positions in which they may be shown, afford a greater variety than can generally be found in any garden, the scenery of which is confined to the inclosure.

⁵ *Description of Persfield.* Persfield (A) is not a large place; the park contains about 300 acres; and the house stands in the midst of it. On the side of the approach, the inequalities of the ground are gentle, and the plantations pretty; but nothing there is great. On the other side, a beautiful lawn falls precipitately every way into a deep vale which shelves down the middle; the declivities are diversified with clumps and with groves; and a number of large trees straggle along the bottom. This lawn is encompassed

Riding.

passed with wood; and through the wood are walks, which open beyond it upon those romantic scenes which surround the park, and which are the glory of Persfield. The Wye runs immediately below the wood: the river is of a dirty colour; but the shape of its course is very various, winding first in the form of a horse-shoe, then proceeding in a large sweep to the town of Chepstowe, and afterwards to the Severn. The banks are high hills; in different places steep, bulging out, or hollow on the sides; rounded, flattened, or irregular at top; and covered with wood, or broken by rocks. They are sometimes seen in front; sometimes in perspective; falling back for the passage, or closing behind the bend of the river; appearing to meet, rising above, or shooting out beyond one another. The wood which incloses the lawn crowns an extensive range of these hills, which overlook all those on the opposite shore, with the country which appears above or between them; and winding themselves as the river winds, their sides, all rich and beautiful, are alternately exhibited; and the point of view in one spot becomes an object to the next.

In many places the principal feature is a continued rock, in length a quarter of a mile, perpendicular, high, and placed upon a height. To resemble ruins is common to rocks: but no ruin of any single structure was ever equal to this enormous pile; it seems to be the remains of a city; and other smaller heaps scattered about it appear to be fainter traces of the former extent, and strengthen the similitude. It stretches along the brow which terminates the forest of Dean; the face of it is composed of immense blocks of stone, but not rugged; the top is bare and uneven, but not craggy; and from the foot of it, a declivity, covered with thicket, slopes gently towards the Wye, but in one part is abruptly broken off by a ledge of rocks, of a different hue, and in a different direction. From the grotto it seems to rise immediately over a thick wood, which extends down a hill below the point of view, across the valley through which the Wye flows, and up the opposite banks, hides the river, and continues without interruption to the bottom of the rock: from another seat it is seen by itself without even its base; it faces another, with all its appendages about it; and sometimes the sight of it is partially intercepted by trees, beyond which, at a distance, its long line continues on through all the openings between them.

Another capital object is the castle of Chepstowe, a noble ruin of great extent; advanced to the very edge of a perpendicular rock, and so immediately rivetted into it, that from the top of the battlements down to the river seems but one precipice: the same ivy which overspreads the face of the one, twines and clusters among the fragments of the other; many towers, much of the walls, and large remains of the chapel, are standing. Close to it is a most romantic wooden bridge, very ancient, very grotesque, at an extraordinary height above the river, and seeming to abut against the ruins at one end, and some rocky hills at the other. The castle is so near to the alcove at Persfield, that little circumstances in it may be discerned; from other spots more distant, even from the lawn, and from a shrubbery on the side of the lawn, it is distinctly visible, and always beautiful, whether it is seen alone, or with the bridge, with the town, with more or with less of

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the rich meadows which lie along the banks of the Wye, to its junction three miles off with the Severn. A long sweep of that river also, its red cliffs, and the fine rising country in the counties of Somerset and Gloucester, generally terminate the prospect.

Most of the hills about Persfield are full of rocks; some are intermixed with hanging woods, and either advance a little before them, or retire within them, and are backed, or overhung, or separated by trees. In the walk to the cave, a long succession of them is frequently seen in perspective, all of a dark colour, and with wood in the intervals between them. In other parts the rocks are more wild and uncouth; and sometimes they stand on the tops of the highest hills; at other times down as low as the river; they are home-objects in one spot, and appear only in the back-ground of another.

The woods concur with the rocks to render the scenes of Persfield romantic: the place everywhere abounds with them; they cover the tops of the hills; they hang on the steeps; or they fill the depths of the valleys. In one place they front, in another they rise above, in another they sink below the point of view; they are seen sometimes retiring beyond each other, and darkening as they recede; and sometimes an opening between two is closed by a third at a distance beyond them. A point, called the *Lover's Leap*, commands a continued surface of the thickest foliage, which overspreads a vast hollow immediately underneath. Below the Chinese seat the course of the Wye is in the shape of a horse-shoe: it is on one side inclosed by a semicircular hanging wood; the direct steeps of a table-hill shut it in on the other; and the great rock fills the interval between them: in the midst of this rude scene lies the peninsula formed by the river, a mile at the least in length, and in the highest state of cultivation: near the isthmus the ground rises considerably, and thence descends in a broken surface, till it flattens to the water's edge at the other extremity. The whole is divided into corn-fields and pastures; they are separated by hedge-rows, coppices, and thickets; open clumps and single trees stand out in the meadows; and houses and other buildings, which belong to the farms, are scattered amongst them: nature so cultivated, surrounded by nature so wild, compose a most lovely landscape together.

The communications between these several points are generally by close walks; but the covert ends near the Chinese seat; and a path is afterwards conducted through the upper park to a rustic temple, which overlooks on one side some of the romantic views which have been described, and on the other the cultivated hills and valleys of Monmouthshire. To the rude and magnificent scenes of nature now succeeds a pleasant, fertile, and beautiful country, divided into inclosures, not covered with woods, nor broken by rocks and precipices, but only varied by easy swells and gentle declivities. Yet the prospect is not tame: the hills in it are high; and it is bounded by a vast sweep of the Severn, which is here visible for many miles together, and receives in its course the Wye and the Avon.

From the temple a road leads to the Windcliff, an eminence much above the rest, and commanding the whole in one view. The Wye runs at the foot of the hill; the peninsula lies just below; the deep bosom of

H h

the

Riding.

Ridley. the semicircular hanging wood is full in sight; over part of it the great rock appears; all its base, all its accompaniments, are seen; the country immediately beyond it is full of lovely hillocks; and the higher grounds in the counties of Somerset and Gloucester rise in the horizon. The Severn seems to be, as it really is, above Chepstowe, three or four miles wide; below the town it spreads almost to a sea; the county of Monmouth is there the hither shore, and between its beautiful hills appear at a great distance the mountains of Brecknock and Glamorganshire. In extent, in variety, and grandeur, few prospects are equal to this. It comprehends all the noble scenes of Persfield, encompassed by some of the finest country in Britain. See GARDENING.

RIDLEY (Nicholas), bishop of London, and a martyr to the Reformation, was descended of an ancient family, and born in the beginning of the 16th century, at Wilmontfwick in Northumberland. From the grammar-school at Newcastle upon Tyne, he was sent to Pembroke-hall in Cambridge, in the year 1518, where he was supported by his uncle Dr Robert Ridley, fellow of Queen's college. In 1522 he took his first degree in arts; two years after, was elected fellow; and, in 1525, he commenced master of arts. In 1527, having taken orders, he was sent by his uncle, for further improvement, to the Sorbonne at Paris; from thence he went to Louvain, and continued abroad till the year 1529. On his return to Cambridge, he was chosen under-treasurer of the university; and, in 1533, was elected senior proctor. He afterwards proceeded bachelor of divinity, and was chosen chaplain of the university, orator, and *magister glomeræ*. At this time he was much admired as a preacher and disputant. He lost his kind uncle in 1536; but was soon after patronised by Dr Cranmer, archbishop of Canterbury, who made him his domestic chaplain, and presented him to the vicarage of Herne in East Kent; where, we are told, he preached the doctrine of the Reformation. In 1540, having commenced doctor of divinity, he was made king's chaplain; and, in the same year, was elected master of his college in Cambridge. Soon after, Ridley was collated to a prebend in the church of Canterbury; and it was not long before he was accused in the bishop's court, at the instigation of bishop Gardiner, of preaching against the doctrine of the Six Articles. The matter being referred to Cranmer, Ridley was acquitted. In 1545, he was made a prebendary of Westminster abbey; in 1547 was presented, by the fellows of Pembroke-hall, to the living of Soham, in the diocese of Norwich; and the same year was consecrated bishop of Rochester. In 1550 he was translated to the see of London; in which year he was one of the commissioners for examining bishop Gardiner, and concurred in his deprivation. In the year 1552, our prelate returning from Cambridge, unfortunately for himself, paid a visit to the Princess, afterwards Queen Mary; to whom, prompted by his zeal for reformation, he expressed himself with too much freedom; for she was scarcely seated on the throne when Ridley was doomed a victim to her revenge. With Cranmer and Latimer he was burnt alive at Oxford, on the 16th of October 1555. He wrote, 1. A treatise concerning images in churches. 2. Brief declaration of the Lord's Supper.

3. Certain godly and comfortable conferences between bishop Ridley and Mr Hugh Latimer, during their imprisonment. 4. A comparison between the comfortable doctrine of the Gospel and the traditions of the Popish religion; and other works.

RIFLE, in gunnery. See GUNNERY, n^o 36, *et seq.*

RIGA, a large, strong, populous, and rich town of the Russian empire, and capital of Livonia. It is a large trading place, and has a very considerable fortress; the trade is chiefly in corn, skins, leather, and naval stores. It was taken by the Russians in 1710, after they had blocked it up a long while, during which the inhabitants were afflicted with the plague. The castle is square, and defended by four towers and six bastions; besides which, it has a fine arsenal. The Protestants have still a handsome college here. It is seated on a large plain on the river Dwina. E. Long. 24. 25. N. Lat. 57. 0.

RIGADOON, a gay and brisk dance, borrowed originally from Provence in France, and performed in figure by a man and woman.

RIGGING of a *SHIP*, a general name given to all the ropes employed to support the masts, and to extend or reduce the sails, or arrange them to the disposition of the wind. The former, which are used to sustain the masts, remain usually in a fixed position, and are called *standing rigging*; such are the shrouds, stays, and back-stays. The latter, whose office is to manage the sails, by communicating with various blocks or pulleys, situated in different places of the masts, yards, shrouds, &c. are comprehended in the general term of *running rigging*; such are the braces, sheets, haliards, clue-lines, brails, &c.

In rigging a mast, the first thing usually fixed upon its head is a circular wreath or rope, called the *gromet*, or *collar*, which is firmly beat down upon the top of the hounds. The intent of this is to prevent the shrouds from being fretted or worn by the trestle-trees, or shoulders of the mast; after this are laid on the two pendants, from whose lower ends the main or fore tackles are suspended; and next, the shrouds of the starboard and larboard side, in pairs, alternately. The whole is covered by the stays, which are the largest ropes of the rigging.—When a yard is to be rigged, a gromet is also driven first on each of its extremities; next to this are fitted on the horses, the braces, and lastly the lifts or top-sail sheet-blocks.

The principal objects to be considered in rigging a ship, appear to be strength, convenience, and simplicity: or, the properties of affording sufficient security to the masts, yards, and sails; of arranging the whole machinery in the most advantageous manner, to sustain the masts, and facilitate the management of the sails; and of avoiding perplexity, and rejecting whatever is superfluous or unnecessary. The perfection of this art, then, consists in retaining all those qualities, and in preserving a judicious medium between them. See *SHIP-BUILDING*.

RIGHT, in geometry, signifies the same with straight; thus, a straight line is called a *right* one.

RIGHT is a title conferred, 1. Together with *Reverend*, upon all bishops. 2. Together with *Honourable*, upon earls, viscounts, and barons. 3. By courtesy, together with *Honourable*, upon the sons of dukes, marquises,

Rifle
||
Right.

Right.

quisses, and the eldest sons of earls. 4. Together with *Honourable*, to the speaker of the house of commons; but to no other commoner excepting those who are members of his majesty's most honourable privy-council; and the three lord mayors of London, York, and Dublin, and the lord provost of Edinburgh, during their office. See HONOURABLE and PROVOST.

Hereditary RIGHT. See HEREDITARY.

The term
right ex-
plained.

* See Rec-
titude.

RIGHT is a word which, in the propriety of the English language, is used sometimes as an adjective and sometimes as a substantive. As an adjective it is nearly of the same import with *fit*, *suitable*, *becoming*, *proper*; and whilst it expresses a quality, it indicates a relation*. Thus, when we say that an action is *right*, we must not only know the nature of the action, but, if we speak intelligibly, must also perceive its relation to the end for which it was performed; for an action may be *right* with one end in view which would be *wrong* with another. The conduct of that general would be *right*, who, to save an army that could not be otherwise saved, should place a small detachment in a station where he knew they would all be inevitably cut off; but his conduct would be very *wrong* were he to throw away the life of a single individual for any purpose, however important, which he knew how to accomplish without such a sacrifice.

Many philosophers have talked of actions being *right* and *wrong* in the abstract without regard to their natural consequences; and converting the word into a substantive, they have fancied an eternal rule of *right*, by which the morality of human conduct is in every particular case to be tried. But in these phrases we can discover no meaning. Whatever is *right* must be so on *some account or other*; and whatever is *fit*, must be fit for some *purpose*. When he who rests the foundation of virtue on the *moral sense*, speaks of an action being *right*, he must mean that it is such as, through the medium of that sense, will excite complacency in the mind of the agent, and gain to him the general approbation of mankind. When he who rests moral obligation on the will of God, speaks of some actions as *right* and of others as *wrong*, he must mean that the former are agreeable to the divine will, however made known to men, and the latter disagreeable to it; and the man who deduces the laws of virtue from what he calls the *fitness of things*, must have some *end in view*, for which things are fit, and denominate actions *right* or *wrong* as they tend to promote or counteract that end.

But the word *right*, used as a substantive, has in common as well as in philosophical language a signification which at first view appears to be very different from this. It denotes a *just claim* or an *honest possession*. Thus we say, a father has a *right* to reverence from his children, a husband to the love and fidelity of his wife, and a king to the allegiance of his subjects. But if we trace these *rights* to their source, we shall find that they are all laws of moral obligation, and that they are called *rights* only because it is agreeable to the will of God, to the instinctive dictates of the moral sense, or to the fitness of things, if such a phrase has any meaning, that children reverence their parents, that wives love their husbands, and that subjects pay allegiance to their sovereign. This will be apparent to any man who shall put to himself such questions as these: "Why have parents a *right* to reverence from their children, husbands to the love of

their wives, and sovereigns to the allegiance of their subjects?" As these questions contain in them nothing absurd, it is obvious that they are each capable of a precise answer; but it is impossible to give to any of them an answer which shall have any meaning, and not imply that *right* and *obligation* are reciprocal, or, in other words, that wherever there is a *right* in one person, there is a corresponding *obligation* upon others. Thus to the question, "Why have parents a right to reverence from their children?" it may be answered, "because, under God, they were the authors of their children's being, and protected them from danger, and furnished them with necessaries, when they were in a state so helpless that they could do nothing for themselves." This answer conveys no other meaning than that there is an obligation upon children, in return for benefits received, to reverence their parents. But what is the source of this obligation? It can only be the will of God, the moral sense, or the fitness of things.

This view of the nature of right will enable us to form a proper judgment of the assertion of a late writer, "that man has no rights." The arguments by which this apparent paradox is maintained, are not merely ingenious and plausible; they are absolutely conclusive. But then our philosopher, who never chooses to travel in the beaten track, takes the word *right* in a sense very different from that in which it has been used by all other men, and considers it as equivalent to *discretionary power*. "By the word *right* (says he) is understood a full and complete power of either doing a thing or omitting it, without the person's becoming liable to animadversion or censure from another; that is, in other words, without his incurring any degree of turpitude or guilt." In this sense of the word he affirms, and affirms truly, that a man has no rights, no discretionary power whatever, except in things of such total indifference as, whether "he shall sit on the right or on the left side of his fire, or dine on beef to day or to-morrow."

Godwin's
Political
Justice.

2
Rights of
man,

A proposition so evidently true as this stood not in need of argument to support it; but as his arguments are clearly expressed, and afford a complete confutation of some popular errors sanctioned by the respectable phrase *rights of man*, we shall give our readers an opportunity of studying them in his own words.

"Political society is founded on the principles of morality and justice. It is impossible for intellectual beings to be brought into coalition and intercourse without a certain mode of conduct, adapted to their nature and connection, immediately becoming a duty incumbent on the parties concerned. Men would never have associated if they had not imagined that, in consequence of that association, they would mutually conduce to the advantage and happiness of each other. This is the real purpose, the genuine basis, of their intercourse; and, as far as this purpose is answered, so far does society answer the end of its institution. There is only one postulate more that is necessary to bring us to a conclusive mode of reasoning upon this subject. Whatever is meant by the term *right*, there can neither be opposite rights, nor rights and duties hostile to each other. The rights of one man cannot clash with or be destructive of the rights of another: for this, instead of rendering the subject an important branch of truth and morality as the advocates of the rights of man certain-

Right.

Right.

ly understand it to be, would be to reduce it to a heap of unintelligible jargon and inconsistency. If one man have a right to be free, another man cannot have a right to make him a slave; if one man have a right to inflict chastisement upon me, I cannot have a right to withdraw myself from chastisement; if my neighbour have a right to a sum of money in my possession, I cannot have a right to retain it in my pocket. It cannot be less incontrovertible, that I have no right to omit what my duty prescribes. From hence it inevitably follows that men have no rights.

"It is commonly said, 'that a man has a right to the disposal of his fortune, a right to the employment of his time, a right to the uncontrolled choice of his profession or pursuits.' But this can never be consistently affirmed till it can be shown that he has no duties, prescribing and limiting his mode of proceeding in all these respects.

"In reality, nothing can appear more wonderful to a careful inquirer, than that two ideas so incompatible as *man* and *rights* should ever have been associated together. Certain it is, that one of them must be utterly exclusive and annihilatory of the other. Before we ascribe rights to man, we must conceive of him as a being endowed with intellect, and capable of discerning the differences and tendencies of things. But a being endowed with intellect, and capable of discerning the differences and tendencies of things, instantly becomes a moral being, and has duties incumbent on him to discharge: and duties and rights, as has already been shown, are absolutely exclusive of each other.

"It has been affirmed by the zealous advocates of liberty, 'that princes and magistrates have no rights;' and no position can be more incontrovertible. There is no situation of their lives that has not its correspondent duties. There is no power intrusted to them that they are not bound to exercise exclusively for the public good. It is strange, that persons adopting this principle did not go a step farther, and perceive that the same restrictions were applicable to subjects and citizens."

3
Real and

This reasoning is unanswerable; but it militates not against the *rights of man* in the usual acceptation of the words, which are never employed to denote discretionary power, but a just claim on the one hand, implying a corresponding obligation on the other. Whether the phrase be absolutely proper is not worth the debating: it is authorised by custom—the *jus et norma loquendi*—and is universally understood except by such as the demons of faction, in the form of paradoxical writers on political justice, have been able to mislead by sophistical reasonings.

4
Various.

Rights, in the common acceptation of the word, are of various kinds: they are *natural* or *adventitious*, *alienable* or *unalienable*, *perfect* or *imperfect*, *particular* or *general*. See the article LIBERTY.

5
Natural rights.

Natural rights are those which a man has to his life, limbs, and liberty; to the produce of his personal labour; to the use, in common with others, of air, light, and water; &c. That every man has a natural right or just claim to these things, is evident from their being absolutely necessary to enable him to answer that purpose, whatever it may be, for which he was made a living and a rational being. This shows undeniably, that the Author of his nature designed that he should have the use of them, and that the man who should wanton-

ly deprive him of any one of them, would be guilty of a breach of the divine law, as well as act inconsistently with the fitness of things in every sense in which that phrase can possibly be understood.

Adventitious rights are those which a king has over his subjects, a general over his soldiers, a husband to the person and affections of his wife, and which every man has to the greater part of his property. That the rights of the king and the general are adventitious, is universally admitted. The rights of property have been considered elsewhere (see PROPERTY); and though the human constitution shows sufficiently that men and women have a natural right to the use of each other, yet it is evident that the *exclusive* right of any one man to any one woman, and *vice versa*, must be an adventitious right: But the important question is, How are adventitious rights acquired?

In answer to this question, the moralist who deduces the laws of virtue from the will of God, observes, that as God appears from his works to be a benevolent Being, who wills the happiness of all his creatures (see METAPHYSICS, n° 312.), he must of course will every thing which naturally tends to promote that happiness. But the existence of civil society evidently contributes in a great degree to promote the sum of human happiness (see SOCIETY); and therefore whatever is necessary for the support of civil society in general, or for the conduct of particular societies already established, must be agreeable to the will of God: But the allegiance of subjects to their sovereign, the obedience of soldiers to their leader, the protection of private property, and the fulfilling of contracts, are all absolutely necessary to the support of society: and hence the rights of kings, generals, husbands, and wives, &c. though adventitious, and immediately derived from human appointment, are not less sacred than natural rights, since they may all be ultimately traced to the same source. The same conclusion may easily be drawn by the philosopher, who rests moral obligation on the fitness of things or on a moral sense; only it must in each of these cases partake of the instability of its foundation.

To the sacredness of the rights of marriage, an author already quoted has lately urged some declamatory objections. "It is absurd (says he) to expect, that the inclinations and wishes of two human beings should coincide through any long period of time. To oblige them to act and to live together, is to subject them to some inevitable portion of thwarting, bickering, and unhappiness. This cannot be otherwise, so long as man has failed to reach the standard of absolute perfection. The supposition that I must have a companion for life, is the result of a complication of vices. It is the dictate of cowardice, and not of fortitude. It flows from the desire of being loved and esteemed for something that is not desert.

"But the evil of marriage, as it is practised in European countries, lies deeper than this. The habit is, for a thoughtless and romantic youth of each sex to come together, to see each other for a few times, and under circumstances full of delusion, and then to vow to each other eternal attachment. What is the consequence of this? In almost every instance they find themselves deceived. They are reduced to make the best of an irretrievable mistake. They are presented with the strongest imaginable temptation to become the dupes

Right.

6

Adventitious rights,

7

How acquired.

8

Objections to some of these rights.

8

of

Right.

of falsehood. They are led to conceive it their wisest policy to shut their eyes upon realities; happy if by any perversion of intellect they can persuade themselves that they were right in their first crude opinion of their companion.

"So long as two human beings are forbidden by positive institution to follow the dictates of their own mind, prejudice is alive and vigorous. So long as I seek to engross one woman to myself, and to prohibit my neighbour from proving his superior desert and reaping the fruits of it, I am guilty of the most odious of all monopolies. Over this imaginary prize men watch with perpetual jealousy; and one man will find his desires and his capacity to circumvent as much excited, as the other is excited to traverse his projects and frustrate his hopes. As long as this state of society continues, philanthropy will be crossed and checked in a thousand ways, and the still augmenting stream of abuse will continue to flow."

"The abolition of marriage will be attended with no evils. The intercourse of the sexes will fall under the same system as any other species of friendship. Exclusively of all groundless and obstinate attachments, it will be impossible for me to live in the world without finding one man of a worth superior to that of any other whom I have an opportunity of observing. To this man I shall feel a kindness in exact proportion to my apprehension of his worth. The case will be precisely the same with respect to the female sex; I shall assiduously cultivate the intercourse of that woman whose accomplishments shall strike me in the most powerful manner. 'But it may happen that other men will feel for her the same preference that I do.' This will create no difficulty. We may all enjoy her conversation; and we shall all be wise enough to consider the sensual intercourse as a very trivial object. This, like every other affair in which two persons are concerned, must be regulated in each successive instance by the unforced consent of either party. It is a mark of the extreme depravity of our present habits, that we are inclined to suppose the sensual intercourse anywise material to the advantages arising from the purest affection. Reasonable men now eat and drink, not from the love of pleasure, but because eating and drinking are essential to our healthful existence. Reasonable men then will propagate their species, not because a certain sensible pleasure is annexed to this action, but because it is right the species should be propagated; and the manner in which they exercise this function will be regulated by the dictates of reason and duty."

9
Obviated.

It is right then, according to this political innovator, that the species should be propagated, and reasonable men in his Utopian commonwealth would be incited by reason and duty to propagate them: but the way to fulfil this duty, experience, which is seldom at one with speculative reformation, has already demonstrated, not to consist in the promiscuous intercourse of several men with one woman, but in the fidelity of individuals of the two sexes to each other. Common prostitutes among us seldom prove with child; and the society of *Arrecoys* in Otaheitee, who have completely divested themselves of what our author calls *prejudice*, and are by no means guilty of his *most odious of all monopolies*, are for the most part childless (see OTAHEITEE). He seems to think that a state of equal property would ne-

cessarily destroy our relish for luxury, decrease our inordinate appetites of every kind, and lead us universally to prefer the pleasures of intellect to the pleasures of sense. But here again experience is against him. The *Arrecoys*, who have a property in their women perfectly equal, are the most luxurious and sensual wretches on the face of the earth; sensual indeed to a degree of which the most libidinous European can hardly form a conception.

By admitting it to be a duty to propagate the species, our author must necessarily grant that every thing is right which is requisite to the fulfilling of that duty, and the contrary wrong. If so, promiscuous concubinage is wrong, since we have seen, that by a law of nature it is incompatible with the duty; whence it follows on his own principles, that the sexual union by pairs must be right. The only question therefore to be decided between him and his opponents is, "Whether should that union be temporary or permanent?" And we think the following observations by Mr Paley sufficient to decide it to the conviction of every person not blinded by the rage of innovation.

"A lawgiver, whose counsels were directed by views of general utility, and obstructed by no local impediments, would make the marriage-contract indissoluble during the joint lives of the parties, for the sake of the following advantages: Such a union tends to preserve peace and concord between married persons, by perpetuating their common interest, and by inducing a necessity of mutual compliance. An earlier termination of it would produce a separate interest. The wife would naturally look forward to the dissolution of the partnership, and endeavour to draw to herself a fund against the time when she was no longer to have access to the same resources. This would beget peculation on one side, and mistrust on the other; evils which at present very little disturb the confidence of married life. The second effect of making the union determinable only by death, is not less beneficial. It necessarily happens, that adverse tempers, habits, and tastes, oftentimes meet in marriage. In which case, each party must take pains to give up what offends, and practice what may gratify, the other. A man and woman in love with each other do this insensibly: but love is neither general nor durable; and where that is wanting, no lessons of duty, no delicacy of sentiment, will go half so far with the generality of mankind and womankind as this one intelligible reflection, that they must each make the best of their bargain; and that seeing they must either both be miserable or both share in the same happiness, neither can find their own comfort but in promoting the pleasure of the other. These compliances, though at first extorted by necessity, become in time easy and mutual; and though less endearing than assiduities which take their rise from affection, generally procure to the married pair a repose and satisfaction sufficient for their happiness."

So differently from our author does this judicious writer reason concerning the effects of a permanent union on the tempers of the married pair. Instead of subjecting them to some inevitable portion of thwarting, bickering, and unhappiness, it lays them, in his opinion, under the necessity of curbing their unruly passions, and acquiring habits of gentleness, forbearance, and peace. To this we may add, that both believing the

Right.

Right.

the children propagated during their marriage to be their own (a belief unattainable by the father in a state of promiscuous concubinage), they come by a natural process of the human passions (see PASSION) to love each other through the medium of their offspring. But if it be the duty of man to acquire a spirit first pure, then peaceable, gentle, and easy to be intreated, it must be agreeable to the will of God, and a branch of the fitness of things, that the sexual union last during the joint lives of the parties; and therefore the exclusive right of marriage, though adventitious, must be equally sacred with those which are natural.

10
Rights alienable and unalienable;

But to return from this digression, into which the importance of the subject led us, *rights*, besides being natural or adventitious, are likewise *alienable* or *unalienable*. Every man, when he becomes the member of a civil community, alienates a part of his natural rights. In a state of nature, no man has a superior on earth, and each has a right to defend his life, liberty, and property, by all the means which nature has put in his power. In civil society, however, these rights are all transferred to the laws and the magistrate, except in cases of such extreme urgency as leave not time for legal interposition. This single consideration is sufficient to show, that the right to civil liberty is alienable; though, in the vehemence of men's zeal for it, and in the language of some political remonstrances, it has often been pronounced to be an unalienable right. "The true reason (says Mr Paley) why mankind hold in detestation the memory of those who have sold their liberty to a tyrant is, that, together with their own, they sold commonly or endangered the liberty of others; of which they had certainly no right to dispose." The rights of a prince over his people, and of a husband over his wife, are generally and naturally unalienable.

11
Perfect and imperfect.

Another division of rights is into those which are perfect and those which are imperfect. Perfect rights are such as may be precisely ascertained and asserted by force, or in civil society by the course of law. To imperfect rights neither force nor law is applicable. A man's rights to his life, person, and property, are all perfect; for if any of these be attacked, he may repel the attack by instant violence, punish the aggressor by the course of law, or compel the author of the injury to make restitution or satisfaction. A woman's right to her honour is likewise perfect; for if she cannot otherwise escape, she may kill the ravisher. Every poor man has undoubted right to relief from the rich: but his right is imperfect, for if the relief be not voluntarily given, he cannot compel it either by law or by violence. There is no duty upon which the Christian religion puts a greater value than alms-giving; and every preacher of the gospel has an undoubted right to inculcate the practice of it upon his audience: but even this right is imperfect, for he cannot refuse the communion to a man merely on account of his illiberality to the poor, as he can to another for the neglect of any duty comprehended under the term justice. In elections or appointments to offices, where the qualifications are prescribed, the best qualified candidate has unquestionably a right to success; yet if he be rejected, he can neither seize the office by force, nor obtain redress at law. His right, therefore, is imperfect.

Here a question naturally offers itself to our consideration: "How comes a person to have a right to a thing,

and yet have no right to use the means necessary to obtain it?" The answer is, That in such cases the object or the circumstances of the right are so indeterminate, that the permission of force, even where the right is real and certain, would lead to force in other cases where there exists no right at all. Thus, though the poor man has a right to relief, who shall ascertain the mode, season, and quantum of it, or the person by whom it shall be administered? These things must be ascertained before the right to relief can be enforced by law; but to allow them to be ascertained by the poor themselves, would be to expose property to endless claims. In like manner, the comparative qualifications of the candidate must be ascertained, before he can enforce his right to the office; but to allow him to ascertain his qualifications himself, would be to make him judge in his own cause between himself and his neighbour.

Wherever the right is imperfect on one side, the corresponding obligation on the other must be imperfect likewise. The violation of it, however, is often not less criminal in a moral and religious view than of a perfect obligation. It is well observed by Mr Paley, that greater guilt is incurred by disappointing a worthy candidate of a place upon which perhaps his livelihood depends, and in which he could eminently serve the public, than by filching a book out of a library, or picking a pocket of a handkerchief. The same sentiment has been expressed by Mr Godwin, but in terms by much too strong, and such as show that he was not at the time complete master of his subject. "My neighbour (says he) has just as much right to put an end to my existence with dagger or poison, as to deny me that pecuniary assistance without which I must starve, or as to deny me that assistance without which my intellectual attainments, or my moral exertions, will be materially injured. He has just as much right to amuse himself with burning my house, or torturing my children upon the rack, as to shut himself up in a cell, careless about his fellow men, and to hide 'his talent in a napkin.'"

It is certainly true, that the man who should suffer another to starve for want of that relief which he *knew* that he *alone* could afford him, would be guilty of murder, and murder of the cruellest kind; but there is an immense difference between depriving society of one of its members, and with-holding from that member what might be necessary to enable him to make the greatest possible intellectual attainments. Newton might have been useful and happy though he had never been acquainted with the elements of mathematics; and the late celebrated Mr Fergusson might have been a valuable member of society, though he had never emerged from his original condition of a shepherd. The remainder of the paragraph is too absurd to require a formal confutation. Had our author, burying his talent in a napkin, shut himself up seven years ago in a cell, careless about his fellow men and *political justice*, he would have deprived the public of what he doubtless believes to be much useful instruction; but had he at that period amused himself with burning his neighbour's house, and torturing on the rack two or three children, he would have cut off, for any thing he could know, two or three future Newtons, and have himself been cut off by the insulted laws of his country. Now, without supposing the value

Right.

12
Imperfect rights equally sacred with those which are perfect.

Right,
Righteous-
ness.

13
Rights par-
ticular and
general.

of ten Newtons to be equal to that of one Godwin, we are warranted to say, that however great his merits may be, they are not infinite, and that the addition of those of one Newton to them would undoubtedly increase their sum.

Rights, are particular or general. Particular rights are such as belong to certain individuals or orders of men, and not to others. The rights of kings, of masters, of husbands, of wives, and, in short, all the rights which originate in society, are particular. General rights are those which belong to the species collectively. Such are our rights to the vegetable produce of the earth, and to the flesh of animals for food, though about the origin of this latter right there has been much diversity of opinion, which we have noticed in another place. (See THEOLOGY, Part I. sect. 2d). If the vegetable produce of the earth be included under the general rights of mankind, it is plain that he is guilty of wrong who leaves any considerable portion of land waste merely for his own amusement: he is lessening the common stock of provision which Providence intended to distribute among the species. On this principle it would not be easy to vindicate certain regulations respecting game, as well as some other monopolies which are protected by the municipal laws of most countries. Mr Paley, by just reasoning, has established this conclusion, "that nothing ought to be made exclusive property which can be conveniently enjoyed in common." An equal division of land, however, the dream of some visionary reformers, would be injurious to the general rights of mankind, as it may be demonstrated, that it would lessen the common stock of provisions, by laying every man under the necessity of being his own weaver, tailor, shoemaker, smith, and carpenter, as well as ploughman, miller, and baker. Among the general rights of mankind is the right of *necessity*; by which a man may use or destroy his neighbour's property when it is absolutely necessary for his own preservation. It is on this principle that goods are thrown overboard to save the ship, and houses pulled down to stop the progress of a fire. In such cases, however, at least in the last, restitution ought to be made when it is in our power; but this restitution will not extend to the original value of the property destroyed, but only to what it was worth at the time of destroying it, which, considering its danger, might be very little.

RIGHTEOUSNESS, means justice, honesty, virtue, goodness, and amongst Christians is of exactly the same import with holiness, without which, we are told, no man shall see the Lord. The doctrine of the fall, and of redemption through Jesus Christ, has occasioned much disputation, and given rise to many singular notions in the world. The haughty philosopher, dissatisfied with mysteries, and with the humiliating doctrine of atonement by a crucified Saviour, has made a religion for himself, which he calls *rational Christianity*; and the enthusiast, by extracting doctrines from Scripture which are not contained in it, and which are repugnant to its spirit, has given too much countenance to this presumption. The doctrine of imputed righteousness, by which the merit of Christ is said to be imputed to us, appears to be of this number; and though it has been held by many good, and by some learned men, it is certainly in general unfriendly to virtue, as will be readily allowed by all who have conversed with the more ignorant sort of Methodists in England or Se-

ceders in Scotland. That it does not follow from the doctrine of the atonement, and consequently that it has no foundation in Scripture, will appear elsewhere. See THEOLOGY.

Bill of RIGHTS, in law, is a declaration delivered by the lords and commons to the prince and princess of Orange, 13th February 1688; and afterwards enacted in parliament, when they became king and queen. It sets forth, that king James did, by the assistance of divers evil counsellors, endeavour to subvert the laws and liberties of this kingdom, by exercising a power of dispensing with and suspending of laws; by levying money for the use of the crown by pretence of prerogative without consent of parliament; by prosecuting those who petitioned the king, and discouraging petitions; by raising and keeping a standing army in time of peace; by violating the freedom of election of members to serve in parliament; by violent prosecutions in the court of king's bench; and causing partial and corrupt jurors to be returned on trials, excessive bail to be taken, excessive fines to be imposed, and cruel punishments inflicted; all which were declared to be illegal. And the declaration concludes in these remarkable words: "And they do claim, demand, and insist upon, all and singular the premises, as their undoubted rights and liberties." And the act of parliament itself (1 W. & M. stat. 2. cap. 2.) recognizes "all and singular the rights and liberties, asserted and claimed in the said declaration, to be the true, ancient, indubitable rights of the people of this kingdom." See LIBERTY.

RIGIDITY, in physics, denotes a brittle hardness. It is opposed to ductility, malleability, and softness.

RIGOLL, or REGALS, a kind of musical instrument, consisting of several sticks bound together, only separated by beads. It is tolerably harmonious, being well struck with a ball at the end of a stick. Such is the account which Grassineau gives of this instrument. Skinner, upon the authority of an old English dictionary, represents it as a clavichord, or claricord; possibly founding his opinion on the nature of the office of the tuner of the regals, who still subsists in the establishment of the king's chapel at St James's, and whose business is to keep the organ of the chapel royal in tune; and not knowing that such wind instruments as the organ need frequent tuning, as well as the clavichord and other stringed instruments. Sir Henry Spelman derives the word *rigoll* from the Italian *rigabello*, a musical instrument, anciently used in churches instead of the organ. Walther, in his description of the regal, makes it to be a reed-work in an organ, with metal and also wooden pipes and bellows adapted to it. And he adds, that the name of it is supposed to be owing to its having been presented by the inventor to some king.—From an account of the regal used in Germany, and other parts of Europe, it appears to consist of pipes and keys on one side, and the bellows and wind-chest on the other. We may add, that Lord Bacon (Nat. Hist. cent. ii. §. 102.) distinguishes between the regal and organ, in a manner which shows them to be instruments of the same class. Upon the whole, there is reason to conclude, that the regal or rigoll was a pneumatic, and not a stringed instrument.

Mersennus relates, that the Flemings invented an instrument, *les regales de bois*, consisting of 17 cylindrical pieces.

Rights
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Rigoll.

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Rights of
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Rigor
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Rings.

pieces of wood, decreasing gradually in length, so as to produce a succession of tones and semitones in the diatonic series, which had keys, and was played on as a spinet; the hint of which, he says, was taken from an instrument in use among the Turks, consisting of 12 wooden cylinders, of different lengths, strung together, which being suspended and struck with a stick, having a ball at the end, produced music. Hawkins's Hist. Mus. vol. ii. p. 449.

RIGOR, in medicine, a convulsive shuddering from severe cold, an ague fit, or other disorder.

RIMINI, an ancient, populous, and handsome town of Italy, in Romagna, which is part of the territory of the church, with a bishop's see, an old castle, and a strong tower; as also many remains of antiquity, and very fine buildings. It is famous for a council in 1359, consisting of 400 bishops, who were all Arians except 20. It is seated in a fertile plain, at the mouth of the river Marecchia, on the gulph of Venice. E. Long. 12. 39. N. Lat. 44. 6.

RIND, the skin of any fruit that may be cut off or pared. Rind is also used for the inner bark of trees, or that whitish soft substance which adheres immediately to the wood. See PLANT.

RING, an ornament of gold and silver, of a circular figure, and usually worn on the finger.

The episcopal ring (which makes a part of the pontifical apparatus, and is esteemed a pledge of the spiritual marriage between the bishop and his church) is of very ancient standing. The fourth council of Toledo, held in 633, appoints, that a bishop condemned by one council, and found afterwards innocent by a second, shall be restored, by giving him the ring, staff, &c. From bishops, the custom of the ring has passed to cardinals, who are to pay a very great sum *pro jure annuli cardinalitii*.

RINGS. The antiquity of rings is known from Scripture and profane authors. Judah left his ring or signet with Tamar (Gen. xxxviii. 18). When Pharaoh committed the government of all Egypt to Joseph, he took his ring from his finger, and gave it to Joseph (Gen. xli. 42). After the victory that the Israelites obtained over the Midianites, they offered to the Lord the rings, the bracelets, and the golden necklaces, and the ear-rings, that they had taken from the enemy (Numb. xxxi. 50). The Israelitish women wore rings not only on their fingers, but also in their nostrils and their ears. St James distinguishes a man of wealth and dignity by the ring of gold that he wore on his finger (James ii. 2). At the return of the prodigal son, his father orders him to be dressed in a new suit of clothes, and to have a ring put upon his finger (Luke xv. 22). When the Lord threatened King Jeconiah with the utmost effects of his anger, he tells him, that though he wore the signet or ring upon his finger, yet he should be torn off (Jer. xxii. 24.)

The ring was used chiefly to seal with; and the Scripture generally puts it in the hands of princes and great persons; as the king of Egypt, Joseph, Ahaz, Jezebel, King Ahasuerus, his favourite Haman, Mordecai, who succeeded Haman in his dignity, King Darius (1 Kings xxi. 8.; Esther iii. 10, &c.; Dan. vi. 17). The patents and orders of these princes were sealed with their rings or signets; and it was this that secured to them their authority and respect. See the article SEAL.

RING-Bone. See FARRIERY, Sect. xxxi.

RING-Ousel, in ornithology, a species of TURDUS.

RIO-GRANDE, a river of Africa, which runs from east to west through Negroland, and falls into the Atlantic ocean, in 11 degrees of latitude. Some take it to be a branch of the Niger, of which there is not the least proof.

Rio-Grande, a river of South America, in Brasil, which has its source in an unknown country: it crosses the captainship of Rio-Grande, and falls into the sea at Natal los Reyes.

Rio-Janeiro, a river of South America, which rises in the mountains west of Brasil, and running east through that country, falls into the Atlantic Ocean, in S. Lat 23. 30. The province of Janeiro is one of the richest in Brasil; and produces gold, silver, diamonds, and other precious stones.

RIOM, a town of France, in Auvergne; seated on a hill, in so agreeable a country, that it is called the garden of Auvergne. E. Long. 3. 12. N. Lat. 45. 51.

RIOT, in law. The riotous assembling of 12 persons, or more, and not dispersing upon proclamation, was first made high treason by statute 3 & 4 Edw. VI. c. 5. when the king was a minor, and a change of religion to be effected: but that statute was repealed by statute 1 Mar. c. 1. among the other treasons created since the 25 Edw. III.; though the prohibition was in substance re-enacted, with an inferior degree of punishment, by statute 1 Mar. st. 2. c. 12. which made the same offence a single felony. These statutes specified and particularized the nature of the riots they were meant to suppress; as, for example, such as were set on foot with intention to offer violence to the privy-council, or to change the laws of the kingdom, or for certain other specific purposes; in which cases, if the persons were commanded by proclamation to disperse, and they did not, it was by the statute of Mary made felony, but within the benefit of clergy; and also the act indemnified the peace-officers and their assistants, if they killed any of the mob in endeavouring to suppress such riot. This was thought a necessary security in that sanguinary reign, when popery was intended to be re-established, which was like to produce great discontents: but at first it was made only for a year, and was afterwards continued for that queen's life. And, by statute 1 Eliz. c. 16. when a reformation in religion was to be once more attempted, it was revived and continued during her life also; and then expired. From the accession of James I. to the death of Queen Anne, it was never once thought expedient to revive it; but, in the first year of George I. it was judged necessary, in order to support the execution of the act of settlement, to renew it, and at one stroke to make it perpetual, with large additions. For, whereas the former acts expressly defined and specified what should be accounted a riot, the statute 1 Geo. I. c. 5. enacts, generally, that if any 12 persons are unlawfully assembled to the disturbance of the peace, and any one justice of the peace, sheriff, under sheriff, or mayor of a town, shall think proper to command them by proclamation to disperse, if they contemn his orders and continue together for one hour afterwards, such contempt shall be felony without benefit of clergy. And farther, if the reading of the proclamation be by force opposed, or the reader be in any manner wilfully hindered

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Riot.

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hindered from the reading of it, such opposers and hinderers are felons without benefit of clergy; and all persons to whom such proclamation *ought to have been made*, and knowing of such hindrance, and not dispersing, are felons without benefit of clergy. There is the like indemnifying clause, in case any of the mob be unfortunately killed in the endeavour to disperse them; being copied from the act of queen Mary. And by a subsequent clause of the new act, if any person, so riotously assembled, begin even before proclamation to pull down any church, chapel, meeting-house, dwelling-house, or out-houses, they shall be felons without benefit of clergy.

Riots, routs, and unlawful assemblies, must have three persons at least to constitute them. An *unlawful assembly* is, when three, or more, do assemble themselves together to do an unlawful act, as to pull down inclosures, to destroy a warren or the game therein; and part without doing it, or making any motion towards it. A *rout* is where three or more meet to do an unlawful act upon a common quarrel, as forcibly breaking down fences upon a right claimed of common, or of way, and make some advances towards it. A *riot* is where three or more actually do an unlawful act of violence, either with or without a common cause or quarrel; as if they beat a man; or hunt and kill game in another's park, chase, warren, or liberty; or do any other unlawful act with force and violence; or even do a lawful act, as removing a nuisance, in a violent and tumultuous manner. The punishment of unlawful assemblies, if to the number of 12, we have just now seen, may be capital, according to the circumstances that attend it; but, from the number of three to eleven, is by fine and imprisonment only. The same is the case in riots and routs by the common law; to which the pillory in very enormous cases has been sometimes superadded. And by the statute 13 Hen. IV. c. 7. any two justices, together with the sheriff or under-sheriff of the county, may come with the *posse comitatus*, if need be, and suppress any such riot, assembly, or rout, arrest the rioters, and record upon the spot the nature and circumstances of the whole transaction; which record alone shall be a sufficient conviction of the offenders. In the interpretation of which statute it hath been holden, that all persons, noblemen and others, except women, clergymen, persons decrepit, and infants under 15, are bound to attend the justices in suppressing a riot, upon pain of fine and imprisonment; and that any battery, wounding, or killing the rioters, that may happen in suppressing the riot, is justifiable. So that our ancient law, previous to the modern riot-act, seems pretty well to have guarded against any violent breach of the public peace; especially as any riotous assembly on a public or general account, as to redress grievances or pull down all inclosures, and also resisting the king's forces if sent to keep the peace, may amount to overt acts of high treason, by levying war against the king.

RIPEN, a town of Denmark, in north Jutland, and capital of a diocese of the same name, with a bishop's see, a good harbour, a castle, two colleges, and a public library. The tombs of several of the kings of Denmark are in the cathedral church, which is a very handsome structure. The harbour, which has contributed greatly to the prosperity of this place, is at a

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small distance, being seated at the mouth of the river Nipsaa, in a country which supplies the best beeves in Denmark. It is 45 miles north-west of Sleswick and 25 south-by-west of Wiburg. E. Long. 8. 94. N. Lat. 55. 25. The diocese is bounded on the north by those of Wiburg and Athuys, on the south by the duchy of Sleswick, and on the east and west by the sea.

RIPENING of Grain, means its arriving to maturity. The following paper, which appeared in the first volume of the Transactions of the Royal Society of Edinburgh, may be worthy the attention of farmers in this country; where it frequently happens, from continued rains, that the corn is quite green when the frost sets in; in consequence of which, the farmers cut it down, without thinking it can possibly arrive at further maturity.

"Summer 1782 having been remarkably cold and unfavourable, the harvest was very late, and much of the grain, especially oats, was green even in October. In the beginning of October the cold was so great, that, in one night, there was produced on ponds near Kinneil, in the neighbourhood of Borrowstounness, ice three quarters of an inch thick. It was apprehended by many farmers, that such a degree of cold would effectually prevent the further filling and ripening of their corn. In order to ascertain this point, Dr Roebuck selected several stalks of oats, of nearly equal fulness, and immediately cut those which, on the most attentive comparison, appeared the best, and marked the others, but allowed them to remain in the field 14 days longer; at the end of which time they, too, were cut, and kept in a dry room for 10 days. The grains of each parcel were then weighed; when 11 of the grains which had been left standing in the field were found to be equal in weight to 30 of the grains which had been cut a fortnight sooner, though even the best of the grains were far from being ripe. During that fortnight (viz. from October 7th to October 21st) the average heat, according to Fahrenheit's thermometer, which was observed every day at eight o'clock in the morning and six in the evening, was a little above 43. Dr Roebuck observes, that this ripening and filling of corn in so low a temperature should be the less surprising to us, when we reflect, that seed-corn will vegetate in the same degree of heat; and he draws an important inference from his observations, viz. That farmers should be cautious of cutting down their unripe corn, on the supposition that in a cold autumn it could fill no more."

A writer in the Scots Magazine for June 1792, under the signature of *Agricola*, when speaking on this subject, adds the following piece of information, viz. "That grain cut down before it is quite ripe will grow or spring equally well as ripe and plump grain, provided it is properly preserved. I relate this from a fact, and also on the authority of one of the most judicious and experienced farmers in this island, William Craik of Arbigland, Esq; near Dumfries, who was taught by such a season as this threatens to prove. This being the case, every wise economical farmer will preserve his ripe and plump grain for bread, and sow the green and seemingly shrivelled grain, with a perfect conviction that the plants proceeding from such seed will yield as strong and thriving corn as what grows from plump seed. By this means the farmer will enjoy the double advantage of having the corn most productive in flour for bread, and

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his light shrivelled grain will go much farther in seed than the plump grain would do. I saw the experiment made on wheat which was so shrivelled that it was thought scarcely worth giving to fowls, and yet produced heavy large ears."

RIPHCEAN MOUNTAINS, are a chain of high mountains in Russia, to the north-east of the river Oby, where there are said to be the finest fables of the whole empire.

RIPHATH, or RIPHAT, second son of Gomer, and grandson of Japhet (Gen. x. 3. רִפְתָּ Riphath). In most copies he is called *Diphath* in the Chronicles (1 Chr. i. 6. דִּפְתָּ Diphath). The resemblance of the two Hebrew letters ר *Resh* and ד *Daleth* is so much, that they are very often confounded. But, to the credit of the translators of our English version be it said, that in this instance, as well as in many others, they have restored the original reading, and rendered it Riphath. The learned are not agreed about the country that was peopled by the descendants of Riphath. The Chaldee and Arabic take it for France; Eusebius for the country of the Sauromatæ; the Chronicon Alexandrinum for that of the Garamantæ; Josephus for Paphlagonia. Mela assures us, that anciently the people of this province were called *Riphatei*, or Riphaces; and in Bithynia, bordering upon Paphlagonia, may be found the river Rhebeus, a people called *Rhebantes*, and a canton of the same name. These reasons have prevailed with Bochart to believe, that Riphath peopled Paphlagonia. Others think he peopled the Montes Riphei; and this opinion seems the most reasonable to us, because the other sons of Gomer peopled the northern countries towards Scythia, and beyond the Euxine sea.

RISIBLE, any thing capable of exciting laughter.

Ludicrous is a general term, signifying, as may appear from its derivation, what is playfome, sportive, or jocular. *Ludicrous* therefore seems the genus, of which *risible* is a species, limited as above to what makes us laugh.

However easy it may be, concerning any particular object, to say whether it be risible or not, it seems difficult, if at all practicable, to establish any general character, by which objects of that kind may be distinguished from others. Nor is that a singular case; for, upon a review, we find the same difficulty in most of the articles already handled. There is nothing more easy, viewing a particular object, than to pronounce that it is beautiful or ugly, grand or little: but were we to attempt general rules for ranging objects under different classes according to these qualities, we should be much gravelled. A separate cause increases the difficulty of distinguishing risible objects by a general character: all men are not equally affected by risible objects, nor the same man at all times; for in high spirits a thing will make him laugh outright, which will scarce provoke a smile in a grave mood. Risible objects, however, are circumscribed within certain limits. No object is risible but what appears slight, little, or trivial; for we laugh at nothing that is of importance to our own interest or to that of others. A real distress raises pity, and therefore cannot be risible; but a slight or imaginary distress, which moves not pity, is risible. The adventure of the fulling-mills in Don Quixote, is extremely risible; so is the scene where Sancho, in a dark night, tumbling into a pit, and at-

taching himself to the side by hand and foot, hangs there in terrible dismay till the morning, when he discovers himself to be within a foot of the bottom. A nose remarkably long or short, is risible; but to want it altogether, so far from provoking laughter, raises horror in the spectator. With respect to works both of nature and of art, none of them are risible but what are out of rule; some remarkable defect or excess, a very long visage, for example, or a very short one. Hence nothing just, proper, decent, beautiful, proportioned, or grand, is risible.

Even from this slight sketch it will be readily conjectured, that the emotion raised by a risible object is of a nature so singular, as scarce to find place while the mind is occupied with any other passion or emotion; and the conjecture is verified by experience; for we scarce ever find that emotion blended with any other. One emotion we must except; and that is, contempt raised by certain improprieties: every improper act inspires us with some degree of contempt for the author; and if an improper act be at the same time risible to provoke laughter, of which blunders and absurdities are noted instances, the two emotions of contempt and of laughter unite intimately in the mind, and produce externally what is termed a *laugh of derision* or of *scorn*. Hence objects that cause laughter may be distinguished into two kinds: they are either *risible* or *ridiculous*. A risible object is mirthful only; a ridiculous object is both mirthful and contemptible. The first raises an emotion of laughter that is altogether pleasant: the pleasant emotion of laughter raised by the other, is blended with the painful emotion of contempt; and the mixed emotion is termed *the emotion of ridicule*. The pain a ridiculous object gives me, is repented and punished by a laugh of derision. A risible object, on the other hand, gives me no pain: it is altogether pleasant by a certain sort of titillation, which is expressed externally by mirthful laughter. See RIDICULE.

Risible objects are so common, and so well understood, that it is unnecessary to consume paper or time upon them. Take the few following examples:

Falstaff. I do remember him at Clement's inn, like a man made after supper of a cheese-paring. When he was naked, he was for all the world like a forked radish, with a head fantastically carved upon it with a knife.

Second part, Henry IV. act. 3. sc. 5.

The foregoing is of disproportion. The following examples are of slight or imaginary misfortunes.

Falstaff. Go fetch me a quart of sack, put a toast in't. Have I liv'd to be carried in a basket, like a barrow of butcher's offal, and to be thrown into the Thames! Well, if I be served such another trick, I'll have my brains ta'en out and butter'd, and give them to a dog for a new-year's gift. The rogues slighted me into the river with as little remorse as they would have drown'd a bitch's blind puppies, fifteen i'th' litter; and you may know by my size that I have a kind of alacrity in sinking; if the bottom were as deep as hell, I should down. I had been drown'd, but that the shore was shelvy and shallow; a death that I abhor: for the water swells a man; and what a thing should I have been when I had been swell'd? I should have been a mountain of mummy.

Merry Wives of Windsor, act 3. sc. 15.

Falstaff.

Risible.

Riffle
||
River.

Falstaff. Nay, you shall hear, Master Brook, what I have suffer'd to bring this woman to evil for your good. Being thus cramm'd in the basket, a couple of Ford's knaves, his hinds, were call'd forth by their mistress, to carry me in the name of foul clothes to Datchet-lane. They took me on their shoulders, met the jealous knave their master in the door, who ask'd them once or twice what they had in their basket. I quak'd for fear, lest the lunatic knave would have search'd it; but Fate, ordaining he should be a cuckold, held his hand. Well, on went he for a search, and away went I for foul clothes. But mark the sequel, Master Brook. I suffer'd the pangs of three egregious deaths: first, an intolerable fright, to be detected by a jealous rotten bell-weather; next, to be compass'd like a good bilbo, in the circumference of a peck, hilt to point, heel to head; and then to be stopt in, like a strong distillation, with stinking clothes that fretted in their own grease. Think of that, a man of my kidney; think of that, that am as subject to heat as butter; a man of continual dissolution and thaw; it was a miracle to 'scape suffocation. And in the height of this bath, when I was more than half stew'd in grease, like a Dutch dish, to be thrown into the Thames, and cool'd glowing hot, in that surge, like a horse-shoe; think of that; hissing hot; think of that, Mr Brook.

Merry Wives of Windsor, act 3. sc. 17.

RITE, among divines, denotes the particular manner of celebrating divine service in this or that country.

RITORNELLO, or REPEAT, in music, the burden of a song, or the repetition of the first or other verses of a song at the end of each couplet.

RITTERHUSIUS (Conrad), a learned German civilian, born at Brunswick in 1560. He was professor of civil law at Altdorf, and published a variety of works, particularly as a civilian; together with an edition of Oppian in Greek and Latin: he was moreover an excellent critic; his notes upon many eminent authors having been inserted in the best editions of them. He died in 1613.

RITUAL, a book directing the order and manner to be observed in performing divine service in a particular church, diocese, or the like. The ancient heathens had also their rituals, which contained their rites and ceremonies to be observed in building a city, consecrating a temple or altar, in sacrificing, and deifying, in dividing the curiæ, tribes, centuries, and in general, in all their religious ceremonies. There are several passages in Cato's books, *De re Rustica*, which may give us some idea of the rituals of the ancients.

RIVAL, a term applied to two or more persons who have the same pretensions; and which is properly applied to a competitor in love, and figuratively to an antagonist in any other pursuit.

Rite
||
River.

R I V E R,

1
Definition.

IS a current of fresh water, flowing in a BED or CHANNEL from its source to the sea.

The term is appropriated to a *considerable* collection of waters, formed by the conflux of two or more BROOKS, which deliver into its channel the united streams of several RIVULETS, which have collected the supplies of many RILLS trickling down from numberless springs, and the torrents which carry off from the sloping grounds the surplus of every shower.

2
Utility of
rivers.

Rivers form one of the chief features of the surface of this globe, serving as voiders of all that is immediately redundant in our rains and springs, and also as boundaries and barriers, and even as highways, and in many countries as plentiful storehouses. They also fertilise our soil by laying upon our warm fields the richest mould, brought from the high mountains, where it would have remained useless for want of genial heat.

3
Origin of
their
names.

Being such interesting objects of attention, every branch acquires a proper name, and the whole acquires a sort of personal identity, of which it is frequently difficult to find the principle; for the name of the great body of waters which discharges itself into the sea is traced backwards to one of the sources, while all the contributing streams are lost, although their waters form the chief part of the collection. And sometimes the feeder in which the name is preserved is smaller than others which are united to the current, and which like a rich but ignoble alliance lose their name in that of the more illustrious family. Some rivers indeed are respectable even at their birth, coming at once in force from some great lake. Such is the Rio de la Plata, the river St Laurence, and the mighty streams which issue in all directions from the Baical lake. But,

like the sons of Adam, they are all of equal descent, and should take their name from one of the feeders of these lakes. This is indeed the case with a few, such as the Rhone, the Rhine, the Nile. These, after having mixed their waters with those of the lake, resume their appearance and their name at its outlet.

But in general their origin and progress, and even ⁴Origin and the features of their character, bear some resemblance progress similar to the life of man. The river springs from the earth; but its origin is in heaven. Its beginnings are insignificant, and its infancy is frivolous; it plays among the flowers of a meadow; it waters a garden, or turns a little mill. Gathering strength in its youth, it becomes wild and impetuous. Impatient of the restraints which it still meets with in the hollows among the mountains, it is restless and fretful; quick in its turnings, and unsteady in its course. Now it is a roaring cataract, tearing up and overturning whatever opposes its progress, and it shoots headlong down from a rock; then it becomes a fullen and gloomy pool, buried in the bottom of a glin. Recovering breath by repose, it again dashes along, till tired of the uproar and mischief, it quits all that it has swept along, and leaves the opening of the valley strewn with the rejected waste. Now, quitting its retirement, it comes abroad into the world, journeying with more prudence and discretion through cultivated fields, yielding to circumstances, and winding round what would trouble it to overwhelm or remove. It passes through the populous cities and all the busy haunts of man, tendering its services on every side, and becomes the support and ornament of the country. Now increased by numerous alliances, and advanced in

History.

in its course of existence, it becomes grave and stately in its motions, loves peace and quiet; and in majestic silence rolls on its mighty waters, till it is laid to rest in the vast abyss.

5
The religious respect for rivers

The philosopher, the real lover of wisdom, sees much to admire in the economy and mechanism of running waters; and there are few operations of nature which give him more opportunities of remarking the nice adjustment of the most simple means for attaining many purposes of most extensive beneficence. All mankind seem to have felt this. The heart of man is ever open (unless perverted by the habits of selfish indulgence and arrogant self-conceit) to impressions of gratitude and love. He who ascribes the religious principle (debased, though it be by the humbling abuses of superstition) to the workings of fear alone, may betray the slavish meanness of his own mind, but gives a very unfair and a false picture of the hearts of his neighbours. Lucretius was but half a philosopher when he penned his often-quoted apophthegm. Indeed his own invocations show how much the animal was blended with the sage.

6
The effect of gratitude and affection.

We apprehend, that whoever will read with an honest and candid mind, unbiassed by licentious wishes, the accounts of the ancient superstitions, will acknowledge that the amiable emotions of the human soul have had their share in creating the numerous divinities whose worship filled up their calendars. The sun and the host of heaven have in all ages and nations been the objects of a sincere worship. Next to them, the rivers seem to have attracted the grateful acknowledgments of the inhabitants of the adjacent countries. They have everywhere been considered as a sort of tutelar divinities; and each little district, every retired valley, had its river god, who was preferred to all others with a partial fondness. The expostulation of Naaman the Syrian, who was offended with the prophet for enjoining him to wash in the river Jordan, was the natural effusion of this attachment. "What! (said he), are not Abana and Pharphat, rivers of Damascus, more excellent than all the waters of Judæa? Might I not wash in them and be clean? So he went away wroth."

In those countries particularly, where the rural labours, and the hopes of the shepherd and the husbandman, were not so immediately connected with the approach and recess of the sun, and depended rather on what happened in a far distant country by the falls of periodical rains or the melting of collected snows, the Nile, the Ganges, the Indus, the river of Pegu, were the sensible agents of nature in procuring to the inhabitants of their fertile banks all their abundance, and they became the objects of grateful veneration. Their sources were sought out with anxious care even by conquering princes; and when found, were universally worshipped with the most affectionate devotion. These remarkable rivers, so eminently and so palpably beneficent, preserve to this day, amidst every change of habit, and every increase of civilization and improvement, the fond adoration of the inhabitants of those fruitful countries through which they hold their stately course, and their waters are still held sacred. No progress of artificial refinement, not all the corruption of luxurious sensuality, has been able to eradicate this plant of native growth from the heart of man. The sentiment is

congenial to his nature, and therefore it is universal; and we could almost appeal to the feelings of every reader, whether he does not perceive it in his own breast. Perhaps we may be mistaken in our opinion in the case of the corrupted inhabitants of the populous and busy cities, who are habituated to the fond contemplation of their own individual exertions as the sources of all their hopes. Give the shoemaker but leather and a few tools, and he defies the powers of nature to disappoint him; but the simpler inhabitants of the country, the most worthy and the most respectable part of every nation, after equal, perhaps greater exertion both of skill and of industry, are more accustomed to resign themselves to the great ministers of Providence, and to look up to heaven for the "early and the latter rains," without which all their labours are fruitless.

— extrema per illos

Numenque excedens terris vestigia fecit.

And among the husbandmen and the shepherds of all nations and ages, we find the same fond attachment to their springs and rivulets.

Fortunate senex, hic inter flumina nota

Et fontes sacros frigus captabis opacum,

was the mournful ejaculation of poor Melibœus. We hardly know a river of any note in our own country whose source is not looked on with some respect.

We repeat our assertion, that this worship was the offspring of affection and gratitude, and that it is giving a very unfair and false picture of the human mind to ascribe these superstitions to the working of fear alone. These would have represented the river-gods as seated on ruins, brandishing rooted-up trees, with angry looks, pouring out their sweeping torrents. But no such thing. The lively imagination of the Greeks felt, and expressed with an energy unknown to all other nations, every emotion of the human soul. They figured the Naiads as beautiful nymphs, patterns of gentleness and of elegance. They are represented as partially attached to the children of men; and their interference in human affairs is always in acts of kind assistance and protection. They resemble, in this respect, the rural deities of the northern nations, the fairies, but without their caprices and resentments. And, if we attend to the descriptions and representations of their RIVER-Gods, beings armed with power, an attribute which slavish fear never fails to couple with cruelty and vengeance, we find the same expression of affectionate trust and confidence in their kind dispositions. They are generally called by the respectable but endearing name of *father*. "*Da Tyberi pater,*" says Virgil. Mr Bruce says that the Nile at its source is called the *abay* or "*father*."—We observe this word, or its radix, blended with many names of rivers of the east; and think it probable that when our traveller got this name from the inhabitants of the neighbourhood, they applied to the stream what is meant to express the tutelar or presiding spirit. The river-gods are always represented as venerable old men, to indicate their being coeval with the world. But it is always a *cruda viridisque senectus*, and they are never represented as oppressed with age and decrepitude. Their beards are long and flowing, their looks placid, their attitude easy, reclined on a bank, covered, as they are crowned, with never-fading sedges and bulrushes, and leaning on their urns, from which they pour out their plentiful and fertilizing streams.—

Mr

History. Mr Bruce's description of the sources of the Nile, and of the respect paid to the sacred waters, has not a frowning feature; and the hospitable old man, with his fair daughter Irepone, and the gentle priesthood which peopled the little village of Geesh, forms a contrast with the neighbouring Galla (among whom a military leader was called the *lamb*, because he did not murder pregnant women), which very distinctly paints the inspiring principle of this superstition. Pliny says (VIII. 8.) that at the source of the Clitumnus there is an ancient temple highly respected. The presence and the power of the divinity are expressed by the fates which stand in the vestibule.—Around this temple are several little chapels, each of which covers a sacred fountain; for the Clitumnus is the father of several little rivers which unite their streams with him. At some distance below the temple is a bridge which divides the sacred waters from those which are open to common use. No one must presume to set his foot in the streams above this bridge; and to step over any of them is an indignity which renders a person infamous. They can only be visited in a consecrated boat. Below the bridge we are permitted to bathe, and the place is incessantly occupied by the neighbouring villagers. (See also *Vibius Sequester. Orbelini*, p. 101—103. and 221—223. also *Sueton. Caligula*, c. 43. *Virg. Georg. II.* 146.)

What is the cause of all this? The Clitumnus flows (near its source) through the richest pastures, through which it was carefully distributed by numberless drains; and these nourished cattle of such spotless whiteness and extraordinary beauty, that they were sought for with eagerness over all Italy, as the most acceptable victims in their sacrifices. Is not this superstition then an effusion of gratitude?

Such are the dictates of kind-hearted nature in our breasts, before it has been vitiated by vanity and self-conceit, and we should not be ashamed of feeling the impression. We hardly think of making any apology for dwelling a little on this incidental circumstance of the superstitious veneration paid to rivers. We cannot think that our readers will be displeased at having agreeable ideas excited in their minds, being always of opinion that the torch of true philosophy will not only enlighten the understanding, but also warm and cherish the affections of the heart.

7
Origin of
rivers.

With respect to the origin of rivers, we have very little to offer in this place. It is obvious to every person, that besides the torrents which carry down into the rivers what part of the rains and melted snows is not absorbed by the soil or taken up by the plants which cover the earth, they are fed either immediately or remotely by the springs. A few remarkable streams rush at once out of the earth in force, and must be considered as the continuation of subterraneous rivers, whose origin we are therefore to seek out; and we do not know any circumstance in which their first beginnings differ from those of other rivers, which are formed by the union of little streams and rills, each of which has its own source in a spring or fountain. This question, therefore, What is the process of nature, and what are the supplies which fill our springs? will be treated of under the word **SPRING**.

Whatever be the source of rivers, it is to be met with in almost every part of the globe. The crust of

earth with which the rocky framing of this globe is covered is generally stratified. Some of these strata are extremely pervious to water, having but small attraction for its particles, and being very porous. Such is the quality of gravelly strata in an eminent degree. Other strata are much more firm, or attract water more strongly, and refuse it a passage. This is the case with firm rock and with clay. When a stratum of the first kind has one of the other immediately under it, the water remains in the upper stratum, and bursts out wherever the sloping sides of the hills cut off the strata, and this will be in the form of a trickling spring, because the water in the porous stratum is greatly obstructed in its passage towards the outlet. As this irregular formation of the earth is very general, we must have springs, and of course rivers or rivulets, in every corner where there are high grounds.

Rivers flow from the higher to the low grounds. ⁸ It is the arrangement of this elevation which distributes them over the surface of the earth. And this appears to be accomplished with considerable regularity; and, except the great desert of Kobi on the confines of Chinese Tartary, we do not remember any very extensive track of ground that is deprived of those channels for voiding the superfluous waters; and even there they are far from being redundant.

The course of rivers give us the best general method ⁹ for judging of the elevation of a country. Thus it appears that Savoy and Switzerland are the highest grounds of Europe, from whence the ground slopes in every direction. From the Alps proceed the Danube and the Rhine, whose courses mark the two great valleys, into which many lateral streams descend. The Po also and the Rhone come from the same head, and with a steeper and shorter course find their way to the sea through valleys of less breadth and length. On the west side of the valleys of the Rhine and the Rhone the ground rises pretty fast, so that few tributary streams come into them from that side; and from this gentle elevation France slopes to the westward. If a line, nearly straight, but bending a little to the northward, be drawn from the head of Savoy and Switzerland all the way to Solikamskoy in Siberia, it will nearly pass through the most elevated part of Europe; for in this track most of the rivers have their rise. On the left go off the various feeders of the Elbe, the Oder, the Wesel, the Niemen, the Duna, the Neva, the Dwina, the Petzora. On the right, after passing the feeders of the Danube, we see the sources of the Sereth and Pruth, the Dniester, the Bog, the Dnieper, the Don, and the mighty Volga. The elevation, however, is extremely moderate; and it appears from the levels taken with the barometer by the Abbé Chappe d'Auteroche, that the head of the Volga is not more than 470 feet above the surface of the ocean. And we may observe here by the bye, that its mouth, where it discharges its waters into the Caspian sea, is undoubtedly lower, by many feet, than the surface of the ocean. See **PNEUMATICS**, n° 277. Spain and Finland, with Lapland, Norway, and Sweden, form two detached parts, which have little symmetry with the rest of Europe.

A chain of mountains begins in Nova Zembla, and stretches due south to near the Caspian Sea, dividing Europe from Asia. About three or four degrees north of

History.

⁸ They flow from the higher to the lower grounds.

⁹ Course of the rivers of Europe.

²⁷ Of Asia.

History.

of the Caspian sea it bends to the south-east, traverses western Tartary, and passing between the Tengis and Zaizan lakes, it then branches to the east and south. The eastern branch runs to the shores of Korea and Kamtschatka. The southern branch traverses Turkestan and Thibet, separating them from India, and at the head of the kingdom of Ava joins an arm stretching from the great eastern branch, and here forms the centre of a very singular radiation. Chains of mountains issue from it in every direction. Three or four of them keep very close together, dividing the continent into narrow slips, which have each a great river flowing in the middle, and reaching to the extreme points of Malacca, Cambodia, and Cochin-china. From the same central point proceeds another great ridge due east, and passes a little north of Canton in China. We called this a singular centre: for though it sends off so many branches, it is by no means the most elevated part of the continent. In the triangle which is included between the first southern ridge (which comes from between the lakes Tanges and Zaizan), the great eastern ridge, and its branch which almost unites with the southern ridge, lies the Boutan, and part of Tibet, and the many little rivers which occupy its surface, flow southward and eastward, uniting a little to the north of the centre often mentioned, and then pass through a gorge eastward into China. And it is farther to be observed, that these great ridges do not appear to be seated on the highest parts of the country; for the rivers which correspond to them are at no great distance from them, and receive their chief supplies from the other sides. This is remarkably the case with the great Oby, which runs almost parallel to the ridge from the lakes to Nova Zembla. It receives its supplies from the east, and indeed it has its source far east. The highest grounds (if we except the ridges of mountains which are boundaries) of the continent seem to be in the country of the Calmucs, about 95° east from London, and latitude 43° or 45° north. It is represented as a fine though sandy country, having many little rivers which lose themselves in the sand, or end in little salt lakes. This elevation stretches north-east to a great distance; and in this track we find the heads of the Irtysh, Selenga, and Tunguskaia (the great feeders of the Oby), the Olenitz, the Lena, the Yana, and some other rivers which all go off to the north. On the other side we have the great river Amur, and many smaller rivers, whose names are not familiar. The Hoangho, the great river of China, rises on the south side of the great eastern ridge we have so often mentioned. This elevation, which is a continuation of the former, is somewhat of the same complexion, being very sandy, and at present is a desert of prodigious extent. It is described, however, as interspersed with vast tracks of rich pasture; and we know that it was formerly the residence of a great nation, who came south, by the name of *Turks*, and possessed themselves of most of the richest kingdoms of Asia. In the south-western extremity of this country are found remains not only of barbaric magnificence, but even of cultivation and elegance. It was a profitable privilege granted by Peter the Great to some adventurers to search these sandy deserts for remains of former opulence, and many pieces of delicate workmanship (tho' not in a style which we would admire) in gold and sil-

ver were found. Vaults were found buried in the sand filled with written papers, in a character wholly unknown; and a wall was discovered extending several miles, built with hewn stone, and ornamented with cornice and battlements. But we are forgetting ourselves, and return to the consideration of the distribution of the rivers on the surface of the earth. A great ridge of mountains begins at the south-east corner of the Euxine Sea, and proceeds eastward, ranging along the south side of the Caspian, and still advancing unites with the mountains first mentioned in Thibet, sending off some branches to the south, which divide Persia, India, and Thibet. From the south side of this ridge flow the Euphrates, Tigris, Indus, Ganges, &c. and from the north the ancient Oxus and many unknown streams.

There is a remarkable circumstance in this quarter of the globe. Although it seems to be nearest to the greatest elevations, it seems also to have places of the greatest depression. We have already said that the Caspian Sea is lower than the ocean. There is in its neighbourhood another great basin of salt water, the lake Aral, which receives the waters of the Oxus or Gihon, which were said to have formerly run into the Caspian Sea. There cannot therefore be a great difference in the level of these two basins; neither have they any outlet, tho' they receive great rivers. There is another great lake in the very middle of Persia, the Zare or Zara, which receives the river Hindemend, of near 250 miles length, besides other streams. There is another such in Asia Minor. The sea of Sodom and Gomorrah is another instance. And in the high countries we mentioned, there are many small salt lakes, which receive little rivers, and have no outlet. The lake Zara in Persia, however, is the only one which indicates a considerable hollow of the country. It is now ascertained by actual survey, that the sea of Sodom is considerably higher than the Mediterranean. This feature is not, however, peculiar to Asia. It obtains also in Africa, whose rivers we now proceed to mention.

Of them, however, we know very little. The Nile ^{Of Africa} indeed is perhaps better known than any river out of Europe; and of its source and progress we have given a full account in a separate article. See NILE.

By the register of the weather kept by Mr Bruce at Gondar in 1770 and 1771, it appears that the greatest rains are about the beginning of July. He says that at an average each month after June it doubles its rains. The calish or canal is opened at Cairo about the 9th of August, when the river has risen 14 peeks (each 21 inches), and the waters begin to decrease about the 10th of September. Hence we may form a conjecture concerning the time which the water employs in coming from Abyssinia. Mr Bruce supposes it 9 days, which supposes a velocity not less than 14 feet in a second; a thing past belief, and inconsistent with all our notions. The general slope of the river is greatly diminished by several great cataracts; and Mr Bruce expressly says, that he might have come down from Sennaar to the cataracts of Syene in a boat, and that it is navigable for boats far above Sennaar. He came from Syene to Cairo by water. We apprehend that no boat would venture down a stream moving even six feet in a second, and none could row up if the velocity was three feet. As the waters begin to decrease about the 10th of Sep-

History. September, we must conclude that the water then flowing past Cairo had left Abyssinia when the rains had greatly abated. Judging in this way, we must still allow the stream a velocity of more than six feet. Had the first swell at Cairo been noticed in 1770 or 1771, we might have guessed better. The year that Thevenot was in Egypt, the first swell of 8 peeks was observed Jan. 28. The calish was opened for 14 peeks on August 14th, and the waters began to decrease on September 23d, having risen to $21\frac{2}{3}$ peeks. We may suppose a similar progress at Cairo corresponding to Mr Bruce's observations at Gondar, and date every thing five days earlier.

We understand that some of our gentlemen stationed far up the Ganges have had the curiosity to take notes of the swellings of that river, and compare them with the overflowings at Calcutta, and that their observations are about to be made public. Such accounts are valuable additions to our practical knowledge, and we shall not neglect to insert the information in some kindred article of this work.

The same mountains which attract the tropical vapours, and produce the fertilizing inundations of the Nile, perform the same office to the famous Niger, whose existence has often been accounted fabulous, and with whose course we have very little acquaintance. The researches of the gentlemen of the African association render its existence no longer doubtful, and have greatly excited the public curiosity. For a farther account of its track, see NIGER.

From the great number, and the very moderate size, of the rivers which fall into the Atlantic Ocean all the way south of the Gambia, we conclude that the western shore is the most elevated, and that the mountains are at no great distance inland. On the other hand, the rivers at Melinda and Sofala are of a magnitude which indicate a much longer course. But of all this we speak with much uncertainty.

¹²
And of A-
merica. The frame-work (so to call it) of America is better known, and is singular.

A chain of mountains begins, or at least is found, in longitude 110° west of London, and latitude 40° north, on the northern confines of the kingdom of Mexico, and stretching southward through that kingdom, forms the ridge of the neck of land which separates North from South America, and keeping almost close to the shore, ranges along the whole western coast of South America, terminating at Cape Horn. In its course it sends off branches, which after separating from it for a few leagues, rejoin it again, inclosing valleys of great extent from north to south, and of prodigious elevation. In one of these, under the equatorial sun, stands the city of Quito, in the midst of extensive fields of barley, oats, wheat, and gardens, containing apples, pears, and gooseberries, and in short all the grains and fruits of the cooler parts of Europe; and although the vine is also there in perfection, the olive is wanting. Not a dozen miles from it in the low countries, the sugar-cane, the indigo, and all the fruits of the torrid zone, find their congenial heat, and the inhabitants swelter under a burning sun. At as small a distance on the other hand tower aloft the pinacles of Pichincha, Corambourou, and Chemboracão, crowned with never melting snows.

The individual mountains of this stupendous range not only exceed in height all others in the world (if

History. we except the Peak of Teneriffe, Mount Ætna, and Mount Blanc); but they are set down on a base incomparably more elevated than any other country. They cut off therefore all communication between the Pacific Ocean and the inland continent; and no rivers are to be found on the west coast of South America which have any considerable length of course or body of waters. The country is drained, like Africa, in the opposite direction. Not 100 miles from the city of Lima, the capital of Peru, which lies almost on the sea shore, and just at the foot of the high Cordilleras, arises out of a small lake the Maragnon or Amazon's river, which, after running northward for about 100 miles, takes an easterly direction, and crosses nearly the broadest part of South America, and falls into the great western ocean at Para, after a course of not less than 3500 miles. In the first half of its descent it receives a few middle-sized rivers from the north, and from the south it receives the great river Combos, springing from another little lake not 50 miles distant from the head of the Maragnon, and inclosing between them a wide extent of country. Then it receives the Yuta, the Yuerva, the Cuchivara, and Parana Mire, each of which is equal to the Rhine; and then the Madeira, which has flowed above 1300 miles. At their junction the breadth is so great, that neither shore can be seen by a person standing up in a canoe; so that the united stream must be about 6 miles broad. In this majestic form it rolls along at a prodigious rate through a flat country, covered with impenetrable forests, and most of it as yet untrodden by human feet. Mr Condamine, who came down the stream, says, that all is silent as the desert, and the wild beasts and numberless birds crowd round the boat, eyeing it as some animal of which they did not seem afraid. The bed was cut deep through an equal and yielding soil, which seemed rich in every part, if he could judge by the vegetation, which was rank in the extreme. What an addition this to the possible population of this globe! A narrow slip along each bank of this mighty river would equal in surface the whole of Europe, and would probably exceed it in general fertility: and although the velocity in the main stream was great, he observed that it was extremely moderate, nay almost still, at the sides; so that in those parts where the country was inhabited by men, the Indians paddled up the river with perfect ease. Boats could go from Para to near the mouth of the Madeira in 38 days, which is near 1200 miles.

Mr Condamine made an observation during his passage down the Maragnon, which is extremely curious and instructive, although it puzzled him very much. He observed that the tide was sensible at a vast distance from the mouth: It was very considerable at the junction of the Madeira; and he supposes that it might have been observed much farther up. This appeared to him very surprising, because there could be no doubt but that the surface of the water there was higher by a great many feet than the surface of the flood of the Atlantic ocean at the mouth of the river. It was therefore very natural for him to ascribe the tide in the Maragnon to the immediate action of the moon on its waters; and this explanation was the more reasonable, because the river extends in the direction of terrestrial longitude, which by the Newtonian theory is most favourable to the production of a tide. Journeying as he
did

History.

did in an Indian canoe, we cannot suppose that he had much leisure or convenience for calculations, and therefore are not surprised that he did not see that even this circumstance was of little avail in so small or shallow a body of water. He carefully noted, however, the times of high and low water as he passed along. When arrived at Para, he found not only that the high water was later and later as we are farther from the mouth, but he found that at one and the same instant there were several points of high water between Para and the confluence of the Madeira, with points of low water intervening. This conclusion was easily drawn from his own observations, although he could not see at one instant the high waters in different places. He had only to compute the time of high water at a particular spot, on the day he observed it at another; allowing, as usual, for the moon's change of position. The result of his observations therefore was, that the surface of the river was not an inclined plane whose slope was lessened by the tide of flood at the mouth of the river, but that it was a waving line, and that the propagation of the tide up the river was nothing different from the propagation of any other wave. We may conceive it clearly, though imperfectly, in this way. Let the place be noted where the tide happens 12 hours later than at the mouth of the river. It is evident that there is also a tide at the very mouth at the same instant; and, since the ocean tide had withdrawn itself during the time that the former tide had proceeded so far up the river, and the tide of ebb is successively felt above as well as the tide of flood, there must be a low water between these two high waters.

Newton had pointed out this curious fact, and observed that the tide at London-Bridge, which is 43 feet above the sea, is not the same with that at Gravesend, but the preceding tide (See *Phil. Trans.* 67.) This will be more particularly insisted on in another place.

Not far from the head of the Maragnon, the Cordilleras send off a branch to the north-east, which reaches and ranges along the shore of the Mexican Gulf, and the Rio Grande de Sta Martha occupies the angle between the ridges.

Another ridge ranges with interruptions along the east coast of Terra Firma, so that the whole waters of this country are collected into the Oroonoko. In like manner the north and east of Brasil are hemmed in by mountainous ridges, through which there is no considerable passage; and the ground sloping backwards, all the waters of this immense track are collected from both sides by many considerable rivers into the great river Paraguay, or Rio de la Plata, which runs down the middle of this country for more than 1400 miles, and falls into the sea through a vast mouth in latitude 35°.

Thus the whole of South America seems as if it had been formerly surrounded by a mound, and been a great basin. The ground in the middle, where the Parana, the Madeira, and the Plata, take their rise, is an immense marsh, uninhabitable for its exhalations, and quite impervious in its present state.

The manner in which the continent of North America is watered, or rather drained, has also some peculiarities. By looking at the map, one will observe first of all a general division of the whole of the best known

part into two, by the valleys in which the beds of the river St Laurence and Mississippi are situated. The head of this is occupied by a singular series of fresh water seas or lakes, viz. the lake Superior and Michigan, which empty themselves into lake Huron by two cataracts. This again runs into lake Erie by the river Detroit, and the Erie pours its waters into the Ontario by the famous fall of Niagara, and from the Ontario proceeds the great river St Laurence.

The ground to the south-west of the lakes Superior and Erie is somewhat lower, and the middle of the valley is occupied by the Mississippi and the Missoure, which receive on both sides a number of smaller streams, and having joined, proceed to the south, under the name Mississippi. In latitude 37, this river receives into its bed the Ohio, a river of equal magnitude, and the Cherokee river, which drains all the country lying at the back of the United States, separated from them by the ranges of the Apalachian mountains. The Mississippi is now one of the chief rivers on the globe, and proceeds due south, till it falls into the Mexican bay through several shifting mouths, which greatly resemble those of the Danube and the Nile, having run above 1200 miles.

The elevated country between this bed of the Mississippi and St Laurence and the Atlantic ocean is drained on the east side by a great number of rivers, some of which are very considerable, and of long course; because instead of being nearly at right angles to the coast, as in other countries, they are in a great measure parallel to it. This is more remarkably the case with Hudson's river, the Delaware, Patomack, Rapahanoc, &c. Indeed the whole of North America seems to consist of ribs or beams laid nearly parallel to each other from north to south, and the rivers occupy the interstices. All those which empty themselves into the bay of Mexico are parallel and almost perfectly straight, unlike what are seen in other parts of the world. The westernmost of them all, the North River, as it is named by the Spaniards, is nearly as long as the Mississippi.

We are very little informed as yet of the distribution of rivers on the north-west coast of America, or the course of those which run into Hudson's and Baffin's bay.

The Maragnon is undoubtedly the greatest river in the world, both as to length of run and the vast body of water which it rolls along. The other great rivers succeed nearly in the following order.

Maragnon,	Amur,
Senegal,	Oroonoko.
Nile,	Ganges,
St Laurence,	Euphrates,
Hoangho,	Danube,
Rio de la Plata,	Don,
Yenisey,	Indus,
Mississippi,	Dnieper,
Volga,	Duina,
Oby,	&c.

We have been much assisted in this account of the course of rivers, and their distribution over the globe, by a beautiful planisphere or map of the world published by Mr Bode astronomer royal at Berlin. The ranges of mountains are there laid down with philosophical discernment and precision; and we recommend it to the notice

Theory.

Theory.

notice of our geographers. We cannot divine what has caused Mr Buffon to say that the course of most rivers is from east to west or from west to east. No physical point of his system seems to require it, and it needs only that we look at his own map to see its falsity. We should naturally expect to find the *general* course of rivers nearly perpendicular to the line of sea-coast; and

we find it so; and the chief exceptions are in opposition to Mr Buffon's assertion. The structure of America is so particular, that *very few* of its rivers have their general course in this direction. We proceed now to consider the motion of rivers; a subject which naturally resolves itself into two parts, *theoretical* and *practical*.

PART I. THEORY OF THE MOTION OF RIVERS AND CANALS.

14
Importance
of the doc-
trine of the
motion of
rivers and
canals.

THE importance of this subject needs no commentary. Every nation, every country, every city, is interested in it. Neither our wants, our comforts, nor our pleasures, can dispense with an ignorance of it. We must conduct their waters to the centre of our dwellings; we must secure ourselves against their ravages; we must employ them to drive those machines which, by compensating for our personal weakness, make a few able to perform the work of thousands; we employ them to water and fertilize our fields, to decorate our mansions, to cleanse and embellish our cities, to preserve or extend our demesnes, to transport from county to county every thing which necessity, convenience, or luxury, has rendered precious to man: for these purposes we must confine and govern the mighty rivers, we must preserve or change the beds of the smaller streams, draw off from them what shall water our fields, drive our machines, or supply our houses. We must keep up their waters for the purposes of navigation, or supply their places by canals; we must drain our fens, and defend them when drained; we must understand their motions, and their mode of secret, slow, but unceasing action, that our bridges, our wharfs, our dikes, may not become heaps of ruins. Ignorant how to proceed in these daily recurring cases, how often do we see projects of high expectation and heavy expence fail of their object, leaving the state burdened with works not only useless but frequently hurtful?

This has long been a most interesting subject of study in Italy, where the fertility of their fields is not more indebted to their rich soil and happy climate, than to their numerous derivations from the rivers which traverse them: and in Holland and Flanders, where their very existence requires unceasing attention to the waters, which are every moment ready to swallow up the inhabitants; and where the inhabitants, having once subdued this formidable enemy, have made those very waters their indefatigable drudges, transporting through every corner of the country the materials of the most extensive commerce on the face of this globe.

Such having been our incessant occupations with moving waters, we should expect that while the operative artists are continually furnishing facts and experiments, the man of speculative and scientific curiosity, excited by the importance of the subject, would ere now have made considerable progress in the science; and that the professional engineer would be daily acting from established principle, and be seldom disappointed in his expectations. Unfortunately the reverse of this is nearly the true state of the case; each engineer is obliged to collect the greatest part of his knowledge from his own experience, and by many dear-bought lessons, to direct his future operations, in which he still proceeds

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with anxiety and hesitation: for we have not yet acquired principles of theory, and experiments have not yet been collected and published, by which an empirical practice might be safely formed. Many experiments of inestimable value are daily made; but they remain with their authors, who seldom have either leisure, ability, or generosity, to add them to the public stock.

The motion of waters has been really so little investigated as yet, that hydraulics may still be called a new study. We have merely skimmed over a few common notions concerning the motions of water; and the mathematicians of the first order seem to have contented themselves with such views as allowed them to entertain themselves with elegant applications of calculus. This, however, has not been their fault. They rarely had any opportunity of doing more, for want of a knowledge of facts. They have made excellent use of the few which have been given them; but it required much labour, great variety of opportunity, and great expence, to learn the multiplicity of things which are combined even in the simplest cases of water in motion. These are seldom the lot of the mathematician; and he is without blame when he enjoys the pleasures within his reach, and cultivates the science of geometry in its most abstracted form. Here he makes a progress which is the boast of human reason, being almost insured from error by the intellectual simplicity of his subject. But when we turn our attention to material objects, and without knowing either the size and shape of the elementary particles, or the laws which nature has prescribed for their action, presume to foresee their effects, calculate their exertions, direct their actions, what must be the consequence? Nature shows her independence with respect to our notions, and, always faithful to the laws which are enjoined, and of which we are ignorant, she never fails to thwart our views, to disconcert our projects, and render useless all our efforts.

To wish to know the nature of the elements is vain, and our gross organs are insufficient for the study. To suppose what we do not know, and to fancy shapes and sizes at will; this is to raise phantoms, and will produce a system, but will not prove a foundation, for any science. But to interrogate Nature herself, study the laws which she so faithfully observes, catch her, as we say, in the fact, and thus wrest from her the secret; this is the only way to become her master, and it is the only procedure consistent with good sense. And we see, that soon after Kepler detected the laws of the planetary motions, when Galileo discovered the uniform acceleration of gravity, when Pascal discovered the pressure of the atmosphere, and Newton discovered the laws of attraction and the track of a ray of light; astronomy, mechanics, hydrostatics, chemistry, optics, quickly became

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came

^{Theory.} came bodies of sound doctrine; and the deductions from their respective theories were found fair representations of the phenomena of nature. Whenever a man has discovered a law of nature, he has laid the foundation of a science, and he has given us a new mean of subjecting to our service some element hitherto independent: and so long as groups of natural operations follow a route which appears to us whimsical, and will not admit our calculations, we may be assured that we are ignorant of the principle which connects them all, and regulates their procedure.

¹⁷ Our ignorance of the general laws of this motion,

This is remarkably the case with several phenomena in the motions of fluids, and particularly in the motion of water in a bed or conduit of any kind. Although the first geniuses of Europe have for this century past turned much of their attention to this subject, we are almost ignorant of the *general laws* which may be observed in their motions. We have been able to select very few points of resemblance, and every case remains nearly an individual. About 150 years ago we discovered, by experience only, the quantity and velocity of water issuing from a small orifice, and, after much labour, have extended this to any orifice; and this is almost the whole of our confidential knowledge. But as to the uniform course of the streams which water the face of the earth, and the maxims which will certainly regulate this agreeably to our wishes, we are in a manner totally ignorant. Who can pretend to say what is the velocity of a river of which you tell him the breadth, the depth, and the declivity? Who can say what swell will be produced in different parts of its course, if a dam or weir of given dimensions be made in it, or a bridge be thrown across it? or how much its waters will be raised by turning another stream into it, or sunk by taking off a branch to drive a mill? Who can say with confidence what must be the dimensions or slope of this branch, in order to furnish the water that is wanted, or the dimensions and slope of a canal which shall effectually drain a fenny district? Who can say what form will cause or will prevent the undermining of banks, the forming of elbows, the pooling of the bed, or the deposition of sands? Yet these are the most important questions.

¹⁸ And the causes of it.

The causes of this ignorance are the want or uncertainty of our principles; the falsity of our only theory, which is belied by experience; and the small number of proper observations or experiments, and difficulty of making such as shall be serviceable. We have, it is true, made a few experiments on the efflux of water from small orifices, and from them we have deduced a sort of theory, dependant on the fall of heavy bodies and the laws of hydrostatic pressure. Hydrostatics is indeed founded on very simple principles, which give a very good account of the laws of the quiescent equilibrium of fluids, in consequence of gravity and perfect fluidity. But by what train of reasoning can we connect these with the phenomena of the uniform motion of the waters of a river or open stream, which can derive its motion only from the slope of its surface, and the modifications of this motion or its velocity only from the width and depth of the stream? These are the only circumstances which can distinguish a portion of a river from a vessel of the same size and shape, in which, however, the water is at rest. In both, gravity is the sole cause of pressure and motion; but there must be some

circumstance peculiar to running waters which modifies the exertions of this active principle, and which, when discovered, must be the basis of hydraulics, and must oblige us to reject every theory founded on fancied hypotheses, and which can only lead to absurd conclusions: and surely absurd consequences, when legitimately drawn, are complete evidence of improper principles.

When it was discovered experimentally, that the velocities of water issuing from orifices at various depths under the surface were as the square roots of those depths, and the fact was verified by repeated experiments, this principle was immediately and without modification applied to every motion of water. Mariotte, Varignon, Guglielmini, made it the basis of complete systems of hydraulics, which prevail to this day, after having received various amendments and modifications. The same reasoning obtains through them all, though frequently obscured by other circumstances, which are more perspicuously expressed by Guglielmini in his *Fundamental Theorems*.

He considers every point P (fig. 1.) in a mass of fluid as an orifice in the side of a vessel, and conceives the particle as having a tendency to move with the same velocity with which it would issue from the orifice. Therefore, if a vertical line APC be drawn thro' that point, and if this be made the axis of a parabolic ADE, of which A at the surface of the fluid is the vertex, and AB (four times the height through which a heavy body would fall in a second) is the parameter, the velocity of this particle will be represented by the ordinate PD of this parabola; that is, PD is the space which it would uniformly describe in a second.

From this principle is derived the following theory of running waters.

Let DC (fig. 2.) be the horizontal bottom of a reservoir, to which is joined a sloping channel CK of uniform breadth, and let AB be the surface of the standing water in the reservoir. Suppose the vertical plane BC pierced with an infinity of holes, through each of which the water issues. The velocity of each filament will be that which is acquired by falling from the surface AB†. The filament C, issuing with this velocity, will then glide down the inclined plane like any other heavy body; and (by the common doctrine of the motion down an inclined plane) when it has arrived at F, it will have the same velocity which it would have acquired by falling through the height OF, the point O being in the horizontal plane AB produced. The same may be said of its velocity when it arrives at H or K. The filament immediately above C will also issue with a velocity which is in the subduplicate ratio of its depth, and will then glide down above the first filament. The same may be affirmed of all the filaments; and of the superficial filament, which will occupy the surface of the descending stream.

From this account of the genesis of a running stream of water, we may fairly draw the following consequences.

1. The velocity of any particle R, in any part of the stream, is that acquired by falling from the horizontal plane AN.

2. The velocity at the bottom of the stream is everywhere greater than anywhere above it, and is least of all at the surface.

3. The velocity of the stream increases continually as the stream recedes from its source.

Theory.

Theory.

4. The depths EF, GH, &c. in different parts of the stream, will be nearly in the inverse subduplicate ratio of the depths under the surface AN: for since the same quantity of water is running through every section EF and GH, and the channel is supposed of uniform breadth, the depth of each section must be inversely as the velocity of the water passing through it. This velocity is indeed different in different filaments of the section; but the mean velocity in each section is in the subduplicate ratio of the depth of the filament under the surface AB. Therefore the stream becomes more shallow as it recedes from the source; and in consequence of this the difference between LH and MG continually diminishes, and the velocities at the bottom and surface of the stream continually approach to equality, and at a great distance from the source they differ insensibly.

5. If the breadth of the stream be contracted in any part, the depth of the running water will be increased in that part, because the same quantity must still pass through; but the velocity at the bottom will remain the same, and that at the surface will be less than it was before; and the area of the section will be increased on the whole.

6. Should a sluice be put across the stream, dipping a little into the water, the water must immediately rise on the upper side of the sluice till it rises above the level of the reservoir, and the smallest immersion of the sluice will produce this effect. For by lowering the sluice, the area of the section is diminished, and the velocity cannot be increased till the water heap up to a greater height than the surface of the reservoir, and this acquires a pressure which will produce a greater velocity of efflux through the orifice left below the sluice.

7. An additional quantity of water coming into this channel will increase the depth of the stream, and the quantity of water which it conveys; but it will not increase the velocity of the bottom filaments, unless it comes from a higher source.

All these consequences are contrary to experience, and show the imperfection, at least, of the explanation.

The third consequence is of all the most contrary to experience. If any one will but take the trouble of following a single brook from its source to the sea, he will find it most rapid in its beginnings among the mountains, gradually slackening its pace as it winds among the hills and gentler declivities, and at last creeping slowly along through the flat grounds, till it is checked and brought to rest by the tides of the ocean.

Nor is the second consequence more agreeable to observation. It is universally found, that the velocity of the surface in the middle of the stream is the greatest of all, and that it gradually diminishes from thence to the bottom and sides.

And the first consequence, if true, would render the running waters on the surface of this earth the instruments of immediate ruin and devastation. If the waters of our rivers, in the cultivated parts of a country, which are two, three, and four hundred feet lower than their sources, run with the velocity due to that height, they would in a few minutes lay the earth bare to the very bones.

The velocities of our rivers, brooks, and rills, being so greatly inferior to what this theory assigns to them

the other consequences are equally contrary to experience. When a stream has its section diminished by narrowing the channel, the current increases in depth, and this is always accompanied by an increase of velocity through the whole of the section, and most of all at the surface; and the area of the section does not increase, but diminishes, all the phenomena, thus contradicting in every circumstance the deduction from the theory; and when the section has been diminished by a sluice let down into the stream, the water gradually heaps up on the upper side of the sluice, and, by its pressure, produces an acceleration of the stream below the sluice, in the same way as if it were the beginning of a stream, as explained in the theory. The velocity now is composed of the velocity preserved from the source and the velocity produced by this subordinate accumulation; and this accumulation and velocity continually increase, till they become such that the whole supply is again discharged through this contracted section: any additional water not only increases the quantity carried along the stream, but also increases the velocity, and therefore the section does not increase in the proportion of the quantity.

It is surprising that a theory really founded on a conceit, and which in every the most familiar and obvious circumstance is contradicted by facts, should have met with so much attention. That Varignon should immediately catch at this notion of Guglielmini, and make it the subject of many elaborate analytical memoirs, is not to be wondered at. This author only wanted *donner prise au calcul*; and it was a usual joke among the academicians of Paris, when any new theorem was invented, *donnons le à Varignon à généraliser*. But his numerous theorems and corollaries were adopted by all, and still make the substance of the present systems of hydraulics. Gravesande, Muschenbroek, and all the elementary treatises of natural philosophy, deliver no other doctrines; and Belidor, who has been considered as the first of all the scientific engineers, details the same theory in his great work the *Architecture Hydraulique*.

Guglielmini was, however, not altogether the dupe of his own ingenuity. He was not only a pretty good mathematician, but an assiduous and sagacious observer. He had applied his theory to some important cases which occurred in the course of his profession as inspector of the rivers and canals in the Milanese, and to the course of the Danube; and could not but perceive that great corrections were necessary for making the theory quadrate in some tolerable manner with observation; and he immediately saw that the motion was greatly obstructed by inequalities of the canal, which gave to the contiguous filaments of the stream transverse motions, which thwarted and confused the regular progress of the rest of the stream, and thus checked its general progress. These obstructions, he observed, were most effectual in the beginning of its course, while yet a small rill, running among stones, and in a very unequal bed. The whole stream being small, the inequalities bore a great proportion to it, and thus the general effect was great. He also saw that the same causes (these transverse motions produced by the unequal bottom) chiefly affected the contiguous filaments, and were the reasons why the velocity at the sides and bottom was so much diminished as to be less than the superficial velocity, and that even this might come to be

Theory. diminished by the same cause. For he observed, that the general stream of a river is frequently composed of a sort of boiling or tumbling motion, by which masses of water are brought up to the surface and again descend. Every person must recollect such appearances in the freshes of a muddy river; and in this way Guglielmini was enabled to account in some measure for the disagreement of his theory with observation.

Mariotte had observed the same obstructions even in the smoothest glass pipes. Here it could not be ascribed to the checks occasioned by transverse motions. He therefore ascribed it to friction, which he supposed to diminish the motion of fluid bodies in the same manner as of solids: and he thence concludes, that the filaments which immediately rub on the sides of the tube have their velocity gradually diminished; and that the filaments immediately adjoining to these, being thus obliged to pass over them or outstrip them, rub upon them, and have their own velocity diminished in like manner, but in a smaller degree; and that the succeeding filaments towards the axis of the tube suffer similar but smaller diminutions. By this means the whole stream may come to have a smaller velocity; and at any rate the medium velocity by which the quantity discharged is determined, is smaller than it would have been independent of friction.

Guglielmini adopted this opinion of Mariotte, and in his next work on the Motion of Rivers, considered this as the *chief* cause of the retardation; and he added a third circumstance, which he considered as of no less consequence, the viscosity or tenacity of water. He observes that syrup, oil, and other fluids, where this viscosity is more remarkable, have their motions prodigiously retarded by it, and supposes that water differs from them only in the degree in which it possesses this quality: and he says, that by this means not only the particles which are moving more rapidly have their motions diminished by those in their neighbourhood which move slower, but that the filaments also which would have moved more slowly are accelerated by their more active neighbours; and that in this manner the superficial and inferior velocities are brought nearer to an equality. But this will never account for the universal fact, that the superficial particles are the swiftest of all. The superficial particles, says he, acquire by this means a greater velocity than the parabolic law allows them; the medium velocity is often in the middle of the depth; the numerous obstacles, continually multiplied and repeated, cause the current to lose the velocity acquired by the fall; the slope of the bottom then diminishes, and often becomes very small, so that the force remaining is hardly able to overcome the obstacles which are still repeated, and the river is reduced almost to a state of stagnation. He observes, that the Rheno, a river of the Milanese, has near its mouth a slope of no more than 50", which he considers as quite inadequate to the task; and here he introduces another principle, which he considers as an essential part of the theory of open currents. This is, that there arises from the very depth of the stream a propelling force which restores a part of the lost velocity. He offers nothing in proof of this principle, but uses it to account for and explain the motion of waters in horizontal canals. The principle has been adopted by the numerous Italian writers on hydraulics, and, by various contrivances, interwoven with the para-

bolic theory, as it is called, of Guglielmini. Our reader may see it in various modifications in the *Idrostatica e Idraulica* of P. Lecchi, and in the *Sperienze Idrauliche* of Michelotti. It is by no means distinct either in its origin or in the manner of its application to the explanation of phenomena, and seems only to serve for giving something like consistency to the vague and obscure discussions which have been published on this subject in Italy. We have already remarked, that in that country the subject is particularly interesting, and has been much commented upon. But the writers of England, France, and Germany, have not paid so much attention to it, and have more generally occupied themselves with the motion of water in close conduits, which seem to admit of a more precise application of mathematical reasoning.

Some of those have considered with more attention the effects of friction and viscosity. Sir Isaac Newton, with his usual penetration, had seen distinctly the manner in which it behoved these circumstances to operate. He had occasion, in his researches into the mechanism of the celestial motions, to examine the famous hypothesis of Descartes, that the planets were carried round the sun by fluid vortices, and saw that there would be no end to uncertainty and dispute till the *modus operandi* of these vortices was mechanically considered. He therefore employed himself in the investigation of the manner in which the acknowledged powers of natural bodies, acting according to the received laws of mechanics, could produce and preserve these vortices, and restore that motion which was expended in carrying the planets round the sun. He therefore, in the second book of the Principles of Natural Philosophy, gives a series of beautiful propositions, viz. 51, 52, &c. with their corollaries, showing how the rotation of a cylinder or sphere round its axis in the midst of a fluid will excite a vortical motion in this fluid; and he ascertains with mathematical precision the motion of every filament of this vortex.

He sets out from the supposition that this motion is excited in the surrounding stratum of fluid in consequence of a want of perfect lubricity, and assumes as an hypothesis, that the initial resistance (or diminution of the motion of the cylinder) which arises from this want of lubricity, is proportional to the velocity with which the surface of the cylinder is separated from the contiguous surface of the surrounding fluid, and that the whole resistance is proportional to the velocity with which the parts of the fluid are mutually separated from each other. From this, and the equality of action and re-action, it evidently follows, that the velocity of any stratum of the vortex is the arithmetical medium between the velocities of the strata immediately within and without it. For the intermediate stratum cannot be in equilibrio, unless it is as much pressed forward by the superior motion of the stratum within it, as it is kept back by the slower motion of the stratum without it.

This beautiful investigation applies in the most perfect manner to every change produced in the motion of a fluid filament, in consequence of the viscosity and friction of the adjoining filaments; and a filament proceeding along a tube at some small distance from the sides has, in like manner, a velocity which is the medium between those of the filaments immediately surrounding it.

25.
Sir Isaac
Newton's
observa-
tions on
this subject.

Theory.

it. It is therefore a problem of no very difficult solution to assign the law by which the velocity will gradually diminish as the filament recedes from the axis of a cylindrical tube. It is somewhat surprising that so neat a problem has never occupied the attention of the mathematicians during the time that these subjects were so assiduously studied; but so it is, that nothing precise has been published on the subject. The only approach to a discussion of this kind, is a Memoire of Mr Pitot, read to the academy of Paris in 1726, where he considers the velocity of efflux through a pipe. Here, by attending to the comparative superiority of the *quantity of motion* in large pipes, he affirms, that the total diminutions arising from friction will be (*ceteris paribus*) in the inverse ratio of the diameters. This was thankfully received by other writers, and is now a part of our hydraulic theories. It has not, however, been attended to by those who write on the motion of rivers, though it is evident that it is applicable to these with equal propriety; and had it been introduced, it would at once have solved all their difficulties, and particularly would have shown how an almost imperceptible declivity would produce the gentle motion of a great river, without having recourse to the unintelligible principle of Guglielmini.

Mr Couplet made some experiments on the motion of the water in the great main pipes of Versailles, in order to obtain some notions of the retardations occasioned by friction. They were found prodigious; but were so irregular, and unsusceptible of reduction to any general principle, (and the experiments were indeed so few that they were unfit for this reduction), that he could establish no theory.—What Mr Belidor established on them, and makes a sort of system to direct future engineers, is quite unworthy of attention.

Upon the whole, this branch of hydraulics, although of much greater practical importance than the conduct of water in pipes, has never yet obtained more than a vague, and, we may call it, slovenly attention from the mathematicians; and we ascribe it to their not having taken the pains to settle its first principles with the same precision as had been done in the other branch. They were, from the beginning, satisfied with a sort of applicability of mathematical principles, without ever making the application. Were it not that some would accuse us of national partiality, we would ascribe it to this, that Newton had not pointed out the way in this as in the other branch. For any intelligent reader of the performances on the motions of fluids in close vessels, will see that there has not a principle, nay hardly a step of investigation, been added to those which were used or pointed out by Sir Isaac Newton. He has nowhere touched this question, the motion of water in an open canal. In his theories of the tides, and of the propagation of waves, he had an excellent opportunity for giving at once the fundamental principles of motion in a free fluid whose surface was not horizontal. But, by means of some of those happy and shrewd guesses, in which, as Daniel Bernoulli says, he excelled all men, he saw the undoubted consequences of some palpable phenomenon which would answer all his present purposes, and therefore entered no farther into the investigation.

The original theory of Guglielmini, or the principle adopted by him, that each particle of the vertical sec-

tion of a running stream has a tendency to move as if it were issuing from an orifice at that depth under the surface, is false; and that it really does so in the face of a dam when the flood-gate is taken away, is no less so; and if it did, the subsequent motions would hardly have any resemblance to those which he assigns them. Were this the case, the exterior form of the cascade would be something like what is sketched in fig. 3. with an abrupt angle at B, and a concave surface BEG. This will be evident to every one who combines the greater velocity of the lower filaments with the slower motion of those which must slide down above them. But this greater advance of the lower filaments cannot take place without an expenditure of the water under the surface AB. The surface therefore sinks, and B instantly ceases to retain its place in the horizontal plane. The water does not successively flow forward from A to B, and then tumble over the precipice; but immediately upon opening the flood-gate, the water wastes from the space immediately behind it, and the whole puts on the form represented in fig. 4. consisting of the curve A a P c EG, convex from A to c, and concave from thence forward. The superficial water begins to accelerate all the way from A; and the particles may be supposed (for the present) to have acquired the velocity corresponding to their depth under the horizontal surface. This must be understood as nothing more than a vague sketch of the motions. It requires a very critical and intricate investigation to determine either the form of the upper curve or the motions of the different filaments. The place A, where the curvature begins, is of equally difficult determination, and is various according to the differences of depth and of inclination of the succeeding canal.

We have given this sort of history of the progress which had been made in this part of hydraulics, that our readers might form some opinion of the many dissertations which have been written on the motion of rivers, and of the state of the arts depending on it. Much of the business of the civil engineer is intimately connected with it: and we may therefore believe, that since there was so little principle in the theories, there could be but very little certainty in the practical operations. The fact has been, that no engineer could pretend to say, with any precision, what would be the effect of his operations. One whose business had given him many opportunities, and who kept accurate and judicious registers of his own works, could pronounce, with some probability, how much water would be brought off by a drain of certain dimensions and a given slope, when the circumstances of the case happened to tally with some former work in which he had succeeded or failed; but out of the pale of his own experience he could only make a sagacious guess. A remarkable instance of this occurred not long ago. A small aqueduct was lately carried into Paris. It had been conducted on a plan presented to the academy, who had corrected it, and gave a report of what its performance would be. When executed in the most accurate manner, it was deficient in the proportion of five to nine. When the celebrated Desaguliers was employed by the city of Edinburgh to superintend the bringing in the water for the supply of the city, he gave a report on the plan which was to be followed. It was executed to his complete satisfaction; and the quantity of

Theory.

Plate
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Uncertainty of
the theories
when applied
to practice exemplified.26
Scarce at
all improved
since
his time.

^{Theory.} water delivered was about one-sixth of the quantity which he promised, and about one-eleventh of the quantity which the no less celebrated M'Laurin calculated from the same plan.

²⁸ Necessity of multiplying experiments. Such being the state of our theoretical knowledge (if it can be called by this name), naturalists began to be persuaded that it was but losing time to make any use of a theory so incongruous with observation, and that the only safe method of proceeding was to multiply experiments in every variety of circumstances, and to make a series of experiments in every important case, which should comprehend all the practicable modifications of that case. Perhaps circumstances of resemblance might occur, which would enable us to connect many of them together, and at last discover the principles which occasioned this connection; by which means a theory founded on science might be obtained. And if this point should not be gained, we might perhaps find a few general facts, which are modified in all these particular cases, in such a manner that we can still trace the general facts, and see the part of the particular case which depends on it. This would be the acquisition of what may be called an empirical theory, by which every phenomenon would be explained, in so far as the explanation of a phenomenon is nothing more than the pointing out the general fact or law under which it is comprehended; and this theory would answer every practical purpose, because we should confidently foresee what consequences would result from such and such premises; or if we should fail even in this, we should still have a series of experiments so comprehensive, that we could tell what place in the series would correspond to any particular case which might be proposed.

²⁹ Labours of Michelotti and Bossut in this way. There are two gentlemen, whose labours in this respect deserve very particular notice, professor Michelotti at Turin, and Abbé Bossut at Paris. The first made a prodigious number of experiments both on the motion of water through pipes and in open canals. They were performed at the expence of the sovereign, and no expence was spared. A tower was built of the finest masonry, to serve as a vessel from which the water was to issue through holes of various sizes, under pressures from 5 to 22 feet. The water was received into basons constructed of masonry and nicely lined with stucco, from whence it was conveyed in canals of brick-work lined with stucco, and of various forms and declivities. The experiments on the expence of water through pipes are of all that have yet been made the most numerous and exact, and may be appealed to on every occasion. Those made in open canals are still more numerous, and are no doubt equally accurate; but they have not been so contrived as to be so generally useful, being in general very unlike the important cases which will occur in practice, and they seem to have been contrived chiefly with the view of establishing or overturning certain points of hydraulic doctrine which were probably prevalent at the time among the practical hydraulists.

The experiments of Bossut are also of both kinds; and though on a much smaller scale than those of Michelotti, seem to deserve equal confidence. As far as they follow the same track, they perfectly coincide in their results, which should procure confidence in the other; and they are made in situations much more analogous to the usual practical cases. This makes

them doubly valuable. They are to be found in his two volumes intitled *Hydrodynamique*. He has opened this path of procedure in a manner so new and so judicious, that he has in some measure the merit of such as shall follow him in the same path.

This has been most candidly and liberally allowed ³⁰ And the him by the chevalier de Buat, who has taken up this progressive matter where the Abbé Bossut left it, and has prosecuted his experiments with great assiduity; and we experiments of must now add with singular success. By a very judicious consideration of the subject, he hit on a particular view of it, which saved him the trouble of a minute consideration of the small internal motions, and enabled him to proceed from a very general and evident proposition, which may be received as the key to a complete system of practical hydraulics. We shall follow this ingenious author in what we have farther to say on the subject; and we doubt not but that our readers will think we do a service to the public by making these discussions of the chevalier de Buat more generally known in this country. It must not however be expected that we shall give more than a synoptical view of them, connected by such familiar reasoning as shall be either comprehended or confided in by persons not deeply versed in mathematical science.

SECT. I. Theory of Rivers.

It is certain that the motion of open streams must, ³¹ His leading in some respects, resemble that of bodies sliding down proposition. inclined planes perfectly polished; and that they would accelerate continually, were they not obstructed: but they are obstructed, and frequently move uniformly. This can only arise from an equilibrium between the forces which promote their descent and those which oppose it. Mr Buat, therefore, assumes the leading proposition, that

When water flows uniformly on any channel or bed, the accelerating force which obliges it to move is equal to the sum of all the resistances which it meets with, whether arising from its own viscosity, or from the friction of its bed.

This law is as old as the formation of rivers, and should be the key of hydraulic science. Its evidence is clear; and it is, at any rate, the basis of all uniform motion. And since it is so, there must be some considerable analogy between the motion in pipes and in open channels. Both owe their origin to an inequality of pressure; both would accelerate continually, if nothing hindered; and both are reduced to uniformity by the viscosity of the fluid and the friction of the channel.

It will therefore be convenient to examine the phenomena of water moving in pipes by the action of its ³² The subject weight only along the sloping channel. But previous of the following discussion proposed. to this, we must take some notice of the obstruction to the entry of water into a channel of any kind, arising from the deflection of the many different filaments which press into the channel from the reservoir from every side. Then we shall be able to separate this diminution of motion from the sum total that is observed, and ascertain what part remains as produced by the subsequent obstructions.

We then shall consider the principle of uniform motion, the equilibrium between the power and the resistance. The power is the relative height of the column of fluid which tends to move along the inclined plane of its bed; the resistance is the friction of

Theory. of the bed, the viscosity of the fluid, and its adhesion to the sides. Here are necessarily combined a number of circumstances which must be gradually detached that we may see the effect of each, viz. the extent of the bed, its perimeter, and its slope. By examining the effects produced by variations of each of these separately, we discover what share each has in the general effect; and having thus analysed the complicated phenomenon, we shall be able to combine those its elements, and frame a formula which shall comprehend every circumstance, from the greatest velocity to the extinction of all motion, and from the extent of a river to the narrow dimensions of a quill. We shall compare this formula with a series of experiments in all this variety of circumstances, partly made by Mr Buat, and partly collected from other authors; and we shall leave the reader to judge of the agreement.

Confident that this agreement will be found most satisfactory, we shall then proceed to consider very cursorily the chief varieties which nature or art may introduce into these beds, the different velocities of the same stream, the intensity of the resistance produced by the inertia of the materials of the channel, and the force of the current by which it continually acts on this channel, tending to change either its dimensions or its form. We shall endeavour to trace the origin of these great rivers which spread like the branches of a vigorous tree, and occupy the surface even of a vast continent. We shall follow them in their course, unfold all their windings, study their train, and regimen, and point out the law of its stability; and we shall investigate the causes of their deviations and wanderings.

The study of these natural laws pleases the mind: but it answers a still greater purpose; it enables us to assist nature, and to hasten her operations, which our wants and our impatience often find too slow. It enables us to command the elements, and to force them to administer to our wants and our pleasures.

We shall therefore, in the next place, apply the knowledge which we may acquire to the solution of the most important hydraulic questions which occur in the practice of the civil engineer.

We shall consider the effects produced by a permanent addition to any river or stream by the union of another, and the opposite effect produced by any draught or offset, showing the elevation or depression produced up the stream, and the change made in the depth and velocity below the addition or offset.

We shall pay a similar attention to the temporary swells produced by freshes.

We shall ascertain the effects of straightening the course of a stream, which, by increasing its slope, must increase its velocity, and therefore sink the waters above the place where the curvature was removed, and diminish the tendency to overflow, while the same immediate consequence must expose the places farther down to the risk of floods from which they would otherwise have been free.

The effects of dams or weirs, and of bars, must then be considered; the gorge or swell which they produce up the stream must be determined for every distance from the weir or bar. This will furnish us with rules for rendering navigable or floatable such waters as have too little depth or too great slope. And it will appear

that immense advantages may be thus derived, with a moderate expence, even from trifling brooks, if we will relinquish all prejudices, and not imagine that such conveyance is impossible, because it cannot be carried on by such boats and small craft as we have been accustomed to look at.

The effects of canals of derivation, the rules or maxims of draining, and the general maxims of embankment, come in the next place; and our discussions will conclude with remarks on the most proper forms for the entry to canals, locks, docks, harbours, and mouths of rivers, the best shape for the surlings of bridges and of boats for inland navigations, and such like subordinate but interesting particulars, which will be suggested by the general thread of discussion.

It is considered, as physically demonstrated (see **HYDROSTATICS** and **HYDRAULICS**), that water issuing from a small orifice in the bottom or side of a very large vessel, almost instantly acquires and maintains the velocity which a heavy body would acquire by falling to the orifice from the horizontal surface of the stagnant water. This we shall call its **NATURAL VELOCITY**. Therefore if we multiply the area of the orifice by this velocity, the product will be the bulk or quantity of the water which is discharged. This we may call the **NATURAL EXPENCE** of water, or the **NATURAL DISCHARGE**.

Let O represent the area or section of the orifice expressed in some known measure, and b its depth under the surface. Let g express the velocity acquired by a heavy body during a second by falling. Let V be the medium velocity of the water's motion, Q the quantity of water discharged during a second, and N the natural expence.

We know that V is equal to $\sqrt{2g} \times \sqrt{b}$. Therefore $N = O \cdot \sqrt{2g} \cdot \sqrt{b}$.

If these dimensions be all taken in English feet, we have $\sqrt{2g}$ very nearly equal to 8; and therefore $V = 8\sqrt{b}$, and $N = O \cdot 8\sqrt{b}$.

But in our present business it is much more convenient to measure every thing by inches. Therefore since a body acquires the velocity of 32 feet 2 inches in a second, we have $2g = 64$ feet 4 inches or 772 inches, and $\sqrt{2g} = 27,78$ inches nearly $27\frac{1}{2}$ inches.

Therefore $V = \sqrt{772} \sqrt{b} = 27,78 \sqrt{b}$, and $N = O \cdot \sqrt{772} \sqrt{b} = O \cdot 27,78 \sqrt{b}$.

But it is also well known, that if we were to calculate the expence or discharge for every orifice by this simple rule, we should in every instance find it much greater than nature really gives us.

When water issues through a hole in a thin plate, the lateral columns, pressing into the hole from all sides, cause the issuing filaments to converge to the axis of the jet, and contract its dimensions at a little distance from the hole. And it is in this place of greatest contraction that the water acquires that velocity which we observe in our experiments, and which we assume as equal to that acquired by falling from the surface. Therefore, that our computed discharge may best agree with observation, it must be calculated on the supposition that the orifice is diminished to the size of this smallest section. But the contraction is subject to variations, and the dimensions of this smallest section

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Natural velocity, expence and discharge through small orifices.

Theory.

34
Contraction.§ See Refl.
ance of
Fluids,
n^o 67.35
Motion of
filaments
in various
particular
situations,36
And the
effects of
contraction
determin-
ed.

are at all times difficult to ascertain with precision. It is therefore much more convenient to compute from the real dimensions of the orifice, and to correct this computed discharge, by means of an actual comparison of the computed and effective discharges in a series of experiments made in situations resembling those cases which most frequently occur in practice. This correction or its cause, in the mechanism of those internal motions, is generally called CONTRACTION by the writers on hydraulics; and it is not confined to a hole in a thin plate: it happens in some degree in all cases where fluids are made to pass through narrow places. It happens in the entry into all pipes, canals, and sluices; nay even in the passage of water over the edge of a board, such as is usually set up on the head of a dam or weir, and even when this is immersed in water on both sides, as in a bar or keep, frequently employed for raising the waters of the level streams in Flanders, in order to render them navigable.

We mentioned an observation of Mr Buat to this effect, when he saw a gooseberry rise up from the bottom of the canal along the face of the bar, and then rapidly fly over its top. We have attempted to represent this motion of the filaments in these different situations.

Fig. 5. A shows the motion through a thin plate. B shows the motion when a tube of about two diameters long is added, and when the water flows with a full mouth. This does not always happen in so short a pipe (and never in one that is shorter), but the water frequently detaches itself from the sides of the pipe, and flows with a contracted jet.

C shows the motion when the pipe projects into the inside of the vessel. In this case it is difficult to make it flow full.

D represents a mouth-piece fitted to the hole, and formed agreeably to that shape which a jet would assume of itself. In this case all contraction is avoided, because the mouth of this pipe may be considered as the real orifice, and nothing now diminishes the discharge but a trifling friction of the sides.

E shows the motion of water over a dam or weir, where the fall is free or unobstructed; the surface of the lower stream being lower than the edge or sole of the waste-board.

F is a similar representation of the motion of water over what we would call a bar or keep.

It was one great aim of the experiments of Michelotti and Bossut to determine the effects of contraction in these cases. Michelotti, after carefully observing the form and dimensions of the natural jet, made various mouth-pieces resembling it, till he obtained one which produced the smallest diminution of the computed discharge, or till the discharge computed for the area of its smaller end approached the nearest to the effective discharge. And he at last obtained one which gave a discharge of 983, when the natural discharge would have been 1000. This piece was formed by the revolution of a trochoid round the axis of the jet, and the dimensions were as follow:

Diameter of the outer orifice = 36
 ——— inner orifice = 46
 Length of the axis = 96

The results of the experiments of the Abbé Bossut and of Michelotti scarcely differ, and they are expressed in the following table:

N or the natural expence

Q for the thin plate fig. A }
almost at the surface

Q for ditto at the depth of 8 feet

Q for ditto at the depth of 16 feet

Q for a tube 2 diameters long, }
fig. B.Q for ditto projecting inwards }
and flowing fullQ for ditto with a contracted }
jet, fig. C.

Q for the mouth-piece, fig. D.

Q for a weir, fig. E.

Q for a bar, fig. F.

10000 = 0.27,78 $\sqrt{h}$ 6526 0.18,13 $\sqrt{h}$ 6195 0.17,21 $\sqrt{h}$ 6173 0.17,15 $\sqrt{h}$ 8125 0.22,57 $\sqrt{h}$ 6814 0.18,93 $\sqrt{h}$ 5137 0.14,27 $\sqrt{h}$ 9831 0.27,31 $\sqrt{h}$ 9536 0.26,49 $\sqrt{h}$ 9730 0.27,03 $\sqrt{h}$

The numbers in the last column of this little table are the cubical inches of water discharged in a second when the height h is one inch.

It must be observed that the discharges assigned here for the weir and bar relate only to the contractions occasioned by the passage over the edge of the board. The weir may also suffer a diminution by the contractions at its two ends, if it should be narrower than the stream, which is generally the case, because the two ends are commonly of square masonry or wood-work. The contraction there is nearly the same with that at the edge of a thin plate. But this could not be introduced into this table, because its effect on the expence is the same in quantity whatever is the length of the waste-board of the weir.

In like manner, the diminution of discharge through a sluice could not be expressed here. When a sluice is drawn up, but its lower edge still remains under water, the discharge is contracted both above and at the sides, and the diminution of discharge by each is in proportion to its extent. It is not easy to reduce either of these contractions to computation, but they may be very easily observed. We frequently can observe the water, at coming out of a sluice into a mill-course, quit the edge of the aperture, and show a part of the bottom quite dry. This is always the case when the velocity of efflux is considerable. When it is very moderate, this place is occupied by an eddy water almost stagnant. When the head of water is 8 or 10 inches, and runs off freely, the space left between it and the sides is about $1\frac{1}{2}$ inches. If the sides of the entry have a slope, this void space can never appear; but there is always this tendency to convergence, which diminishes the quantity of the discharge.

It will frequently abridge computation very much to consider the water discharged in these different situations as moving with a common velocity, which we conceive as produced not by a fall from the surface of the fluid (which is exact only when the expence is equal to the natural expence), but by a fall h accommodated to the discharge: or it is convenient to know the height which would produce that very velocity which the water issues with in these situations.

And also, when the water is observed to be actually moving with a velocity V , and we know whether it is coming through a thin plate, through a tube, over a dam, &c. it is necessary to know the pressure or HEAD OF WATER h which has actually produced this velocity. It is convenient therefore to have the following numbers in readiness.

 h for

$$\begin{aligned}
 b \text{ for the natural expence} &= \frac{V^2}{772} \\
 b \text{ for a thin plate} &= \frac{V^2}{296} \\
 b \text{ for a tube 2 diam. long} &= \frac{V^2}{505} \\
 b \text{ for a dam or weir} &= \frac{V^2}{726} \\
 b \text{ for a bar} &= \frac{V^2}{746}
 \end{aligned}$$

It was necessary to premise these FACTS in hydraulics, that we may be able in every case to distinguish between the force expended in the entry of the water into the conduit or canal, and the force employed in overcoming the resistances along the canal, and in preserving or accelerating its motion in it.

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The motion of rivers depends on the slope of the surface.

The motion of running water is produced by two causes; 1. The action of gravity; and, 2. The mobility of the particles, which makes them assume a level in confined vessels, or determines them to move to that side where there is a defect of pressure. When the surface is level, every particle is at rest, being equally pressed in all directions; but if the surface is not level, not only does a particle on the very surface tend by its own weight towards the lower side, as a body would slide along an inclined plane, but there is a force, external to itself, arising from a superiority of pressure on the upper end of the surface, which pushes this superficial particle towards the lower end; and this is not peculiar to the superficial particles, but affects every particle within the mass of water. In the vessel ACDE (fig. 6.), containing water with an inclined surface AE, if we suppose all frozen but the extreme columns AKHB, FGLE, and a connecting portion HKCDLG, it is evident, from hydrostatical laws, that the water on this connecting part will be pushed in the direction CD; and if the frozen mass BHGF were moveable, it would also be pushed along. Giving it fluidity will make no change in this respect; and it is indifferent what is the situation and shape of the connecting column or columns. The propelling force (MNF being horizontal) is the weight of the column AMNB. The same thing will obtain wherever we select the vertical columns. There will always be a force tending to push every particle of water in the direction of the declivity. The consequence will be, that the water will sink at one end and rise at the other, and its surface will rest in the horizontal position $a O e$, cutting the former in its middle O. This cannot be unless there be not only a motion of perpendicular descent and ascent of the vertical columns, but also a real motion of translation from K towards L. It perhaps exceeds our mathematical skill to tell what will be the motion of each particle. Newton did not attempt it in his investigation of the motion of waves, nor is it at all necessary here. We may, however, acquire a very distinct notion of its general effect. Let OPQ be a vertical plane passing through the middle point O. It is evident that every particle in PQ, such as P, is pressed in the direction QD, with a force equal to the weight of a single row of particles, whose length is the difference between the columns BH and FG. The force acting on the particle Q is, in like manner, the weight of a row of particles = AC—ED. Now if OQ, OA, OE, be divided in the same ratio, so that

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all the figures ACDE, BHGF, &c. may be similar, we see that the force arising solely from the declivity, and acting on each particle on the plane OQ, is proportional to its depth under the surface, and that the row of particles ACQDE, BHPGF, &c. which is to be moved by it, is in the same proportion. Hence it unquestionably follows, that the accelerating force on each particle of the row is the same in all. Therefore the whole plane OQ tends to advance forward together with the same velocity; and in the instant immediately succeeding, all these particles would be found again in a vertical plane indefinitely near to OQ; and if we sum up the forces, we shall find them the same as if OQ were the opening of a sluice, having the water on the side of D standing level with O, and the water on the other side standing at the height AC. This result is extremely different from that of the hasty theory of Guglielmini. He considers each particle in OQ as urged by an accelerating force proportional to its depth, it is true; but he makes it *equal* to the weight of the row OP, and never recollects that the greatest part of it is balanced by an opposite pressure, nor perceives that the force which is not balanced must be distributed among a row of particles which varies in the same proportion with itself. When these two circumstances are neglected, the result must be incompatible with observation. When the balanced forces are taken into the account of pressure, it is evident that the surface may be supposed horizontal, and that motion should obtain in this case as well as in the case of a sloping surface: and indeed this is Guglielmini's professed theory, and what he highly values himself on. He announces this discovery of a new principle, which he calls the energy of deep waters, as an important addition to hydraulics. It is owing to this, says he, that the great rivers are not stagnant at their mouths, where they have no perceptible declivity of surface, but, on the contrary, have greater energy and velocity than farther up, where they are shallower. This principle is the basis of his improved theory of rivers, and is insisted on at great length by all the subsequent writers. Buffon, in his theory of the earth, makes much use of it. We cannot but wonder that it has been allowed a place in the theory of rivers given in the great *Encyclopédie* of Paris, and in an article having the signature (O) of D'Alembert. We have been very anxious to show the falsity of this principle, because we consider it as a mere subterfuge of Guglielmini, by which he was able to patch up the mathematical theory which he had so hastily taken from Newton or Galileo; and we think that we have secured our readers from being misled by it, when we show that this energy must be equally operative when the surface is on a dead level. The absurdity of this is evident. We shall see by and by, that deep waters, when in actual motion, have an energy not to be found in shallow running waters, by which they are enabled to continue that motion: but this is not a moving principle; and it will be fully explained, as an immediate result of principles, not vaguely conceived and indistinctly expressed, like this of Guglielmini, but easily understood, and appreciable with the greatest precision. It is an energy common to all great bodies. Although they lose as much momentum in surmounting any obstacle as small ones, they lose but a small portion of their velocity. At present, employed only in consider-

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Theory.

ing the progressive motion of an open stream, whose surface is not level, it is quite enough that we see that such a motion must obtain, and that we see that there are propelling forces; and that those forces arise *solely* from the want of a level surface, or from the slope of the surface; and that, with respect to any one particle, the force acting on it is proportional to the difference of level between each of the two columns (one on each side of the particle) which produce it. Were the surface level, there would be no motion; if it is not level, there will be motion; and this motion will be proportional to the want of level or the declivity of the surface: it is of no consequence whether the bottom be level or not, or what is its shape.

Hence we draw a fundamental principle, that *the motion of rivers depends entirely on the slope of the surface.*

The SLOPE or declivity of any inclined plane is not properly expressed by the difference of height alone of its extremities; we must also consider its length: and the measure of the slope must be such that it may be the same while the declivity is the same. It must therefore be the same over the whole of any one inclined plane. We shall answer these conditions exactly, if we take for the measure of a slope the fraction which expresses the elevation of one extremity above the other divided by the length of the plane. Thus $\frac{AM}{AF}$ will

express the declivity of the plane AF.

39
When it is uniform the resistance is equal to the accelerating force.

If the water met with no resistance from the bed in which it runs, if it had no adhesion to its sides and bottom, and if its fluidity were perfect, its gravity would accelerate its course continually, and the earth and its inhabitants would be deprived of all the advantages which they derive from its numberless streams. They would run off so quickly, that our fields, dried up as soon as watered, would be barren and useless. No soil could resist the impetuosity of the torrents; and their accelerating force would render them a destroying scourge, were it not that, by kind Providence, the resistance of the bed, and the viscosity of the fluid, become a check which reins them in and sets bounds to their rapidity. In this manner the friction on the sides, which, by the viscosity of the water, is communicated to the whole mass, and the very adhesion of the particles to each other, and to the sides of the channel, are the causes which make the resistances bear a relation to the velocity; so that the resistances augmenting with the velocities, come at last to balance the accelerating force. Then the velocity now acquired is preserved, and the motion becomes uniform, without being able to acquire new increase, unless some change succeeds either in the slope or in the capacity of the channel. Hence arises the second maxim in the motion of rivers, that *when a stream moves uniformly, the resistance is equal to the accelerating force.*

As in the efflux of water through orifices, we pass over the very beginnings of the accelerated motion, which is a matter of speculative curiosity, and consider the motion in a state of permanency, depending on the head of water, the area of the orifice, the velocity, and the expence; so, in the theory of the uniform motion of rivers, we consider the slope, the transverse section or area of the stream, the uniform velocity, and the ex-

pence. It will be convenient to affix precise meanings to the terms which we shall employ.

The SECTION of a stream is the area of a plane perpendicular to the direction of the general motion.

The resistances arise ultimately from the action of the water on the internal surface of the channel, and must be proportional (*ceteris paribus*) to the extent of the action. Therefore if we unfold the whole edge of this section, which is rubbed as it were by the passing water, we shall have a measure of the extent of this action. In a pipe, circular or prismatical, the whole circumference is acted on; but in a river or canal ACDQ (fig. 6.) the horizontal line $a O e$, which makes the upper boundary of the section $a C D e$, is free from all action. The action is confined to the three lines $a C$, CD , $D e$. We shall call this line $a C D e$ the BORDER of the section.

The MEAN VELOCITY is that with which the whole section, moving equally, would generate a solid equal to the expence of the stream. This velocity is to be found perhaps but in one filament of the stream, and we do not know in which filament it is to be found.

Since we are attempting to establish an empirical theory of the motion of rivers, founded entirely on experiment and palpable deductions from them; and since it is extremely difficult to make experiments on open streams which shall have a precision sufficient for such an important purpose—it would be a most desirable thing to demonstrate an exact analogy between the mutual balancing of the acceleration and resistance in pipes and in rivers; for in those we can not only make experiments with all the desired accuracy, and admitting precise measures, but we can make them in a number of cases that are almost impracticable in rivers. We can increase the slope of a pipe from nothing to the vertical position, and we can employ every desired degree of pressure, so as to ascertain its effect on the velocity in degrees which open streams will not admit. The Chevalier de Buat has most happily succeeded in this demonstration; and it is here that his good fortune and his penetration have done so much service to practical science.

Let AB (fig. 7.) be a horizontal tube, through which the water is impelled by the pressure or HEAD DA. This head is the moving power; and it may be conceived as consisting of two parts, performing two distinct offices. One of them is employed in impressing on the water that velocity with which it *actually moves* in the tube. Were there no obstructions to this motion, no greater head would be wanted; but there are obstructions arising from friction, adhesion, and viscosity. This requires force. Let this be the office of the rest of the head of water in the reservoir. There is but one allotment, appropriation, or repartition, of the whole head which will answer. Suppose E to be the point of partition, so that DE is the head necessary for impressing the actual velocity on the water (a head or pressure which has a relation to the form or circumstance of the entry, and the contraction which takes place there). The rest EA is wholly employed in overcoming the simultaneous resistances which take place along the whole tube AB, and is in equilibrio with this resistance. Therefore if we apply at E a tube EC of the same length and diameter with AB, and

Theory.

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Terms precisely explained.

41
The acceleration and resistance of water in an horizontal tube,

Theory.

and having the same degree of polish or roughness; and if this tube be inclined in such a manner that the axis of its extremity may coincide with the axis of AB in the point C—we affirm that the velocity will be the same in both pipes, and that they will have the same expence; for the moving force in the sloping pipe EC is composed of the whole weight of the column DE and the relative weight of the column EC; but this relative weight, by which alone it descends along the inclined pipe EC, is precisely equal to the weight of a vertical column EA of the same diameter. Every thing therefore is equal in the two pipes, viz. the lengths, the diameters, the moving forces, and the resistances; therefore the velocities and discharges will also be equal.

This is not only the case on the whole, but also in every part of it. The relative weight of any part of it EK is precisely in equilibrio with the resistances along that part of the pipe; for it has the same proportion to the whole relative weight that the resistance has to the whole resistance. Therefore (*and this is the most important circumstance, and the basis of the whole theory*) the pipe EC may be cut shorter, or may be lengthened to infinity, without making any change in the velocity or expence, so long as the propelling head DE remains the same.

Leaving the whole head DA as it is, if we lengthen the horizontal pipe AB to G, it is evident that we increase the resistance without any addition of force to overcome it. The velocity must therefore be diminished; and it will now be a velocity which is produced by a smaller head than DE; therefore if we were to put in a pipe of equal length at E, terminating in the horizontal line AG, the water will not run equally in both pipes. In order that it may, we must discover the diminished velocity with which the water now actually runs along AG, and we must make a head DI capable of impressing this velocity at the entry of the pipe, and then insert at I a pipe IH of the same length with AG. The expence and velocity of both pipes will now be the same (A).

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Or in an
inclined
pipe.

What has now been said of a horizontal pipe AB would have been equally true of any inclined pipe AB, A'B (fig. 8.) Drawing the horizontal line CB, we see that DC is the whole head or propelling pressure for either pipe AB or A'B; and if DE is the head necessary for the actual velocity, EC is the head necessary for balancing the resistances; and the pipe EF of the same length with AB, and terminating in the same horizontal line, will have the same velocity; and its in-

clination being thus determined, it will have the same velocity and expence whatever be its length.

Thus we see that the motion in any pipe, horizontal or sloping, may be referred to or substituted for the motion in another inclined pipe, whose head of water, above the place of entry, is that productive of the actual velocity of the water in the pipe. Now, in this case, the accelerating force is equal to the resistance: we may therefore consider this last pipe as a river, of which the bed and the slope are uniform or constant, and the current in a state of permanency; and we now may clearly draw this important conclusion, that pipes and open streams, when in a state of permanency, perfectly resemble each other in the circumstances which are the immediate causes of this permanency. The equilibrium between the accelerating force obtains not only in general, but takes place through the whole length of the pipe or stream, and is predicable of every individual transverse section of either. To make this more palpably evident if possible, let us consider a sloping cylindrical pipe, the current of which is in a state of permanency. We can conceive it as consisting of two half cylinders, an upper and a lower. These are running together at an equal pace; and the filaments of each immediately contiguous to the separating plane and to each other, are not rubbing on each other, nor affecting each others motions in the smallest degree. It is true that the upper half is pressing on the lower, but in a direction perpendicular to the motion, and therefore not affecting the velocity; and we shall see presently, that although the lower side of the pipe bears somewhat more pressure than the other, the resistances are not changed. (Indeed this odds of pressure is accompanied with a difference of motion, which need not be considered at present; and we may suppose the pipe so small or so far below the surface, that this shall be insensible). Now let us suppose, that in an instant the upper half cylinder is annihilated: We then have an open stream; and every circumstance of accelerating force and of resistance remains precisely as it was. The motion must therefore continue as it did; and in this state the only accelerating force is the slope of the surface. The demonstration therefore is complete.

From these observations and reasonings we draw a general and important conclusion, "That the same pipe will be susceptible of different velocities, which it will preserve uniform to any distance, according as it has different inclinations; and each inclination of a pipe of given diameter has a certain velocity peculiar to itself, which will be maintained uniform to any distance

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(A) We recommend it to the reader to make this distribution or allotment of the different portions of the pressure very familiar to his mind. It is of the most extensive influence in every question of hydraulics, and will on every occasion give him distinct conceptions of the internal procedure. Obvious as the thought seems to be, it has escaped the attention of all the writers on the subject. Lecchi, in his *Hydraulics* published in 1766, ascribes something like it to Daniel Bernoulli; but Bernoulli, in the passage quoted, only speaks of the partition of pressure in the instant of opening an orifice. Part of it, says he, is employed in accelerating the quiescent water, and producing the velocity of efflux, and the remainder produces the pressure (now diminished) on the sides of the vessel. Bernoulli, Bossut, and all the good writers, make this distribution in express terms in their explanation of the motion of water through successive orifices; and it is surprising that no one before the Chevalier de Buat saw that the resistance arising from friction required a similar partition of the pressure; but though we should call this good fortune, we must ascribe to his great sagacity and justness of conception the beautiful use that he has made of it: "*suum cuique.*"

Theory.

43

Analogy
between
these pipes
and rivers
demonstrated
by De
Buat.

44

Conse-
quence.

Theory.

whatever; and this velocity increases continually, according to some law, to be discovered by theory or experiment, as the position of the pipe changes, from being horizontal till it becomes vertical; in which position it has the greatest uniform velocity possible relative to its inclination, or depending on inclination alone.

Let this velocity be called the *TRAIN*, or the *RATE* of each pipe.

45
Measure
of the re-
sistance to
the motion
with a gi-
ven velo-
city.

It is evident that this principle is of the utmost consequence in the theory of hydraulics; for by experiment we can find the train of any pipe. It is in train when an increase of length makes no change in the velocity. If lengthening the pipe increases the velocity, the slope of the pipe is too great, and *vice versa*. And having discovered the train of a pipe, and observed its velocity, and computed the head productive of this velocity with the contraction at the entry, the remainder of the head, that is, the slope (for this is equivalent to *EA*), is the measure of the resistance. Thus we obtain the measure of the resistance to the motion with a given velocity in a pipe of given diameter. If we change only the velocity, we get the measure of the new resistance relative to the velocity; and thus discover the law of relation between the resistance and velocity. Then, changing only the diameter of the pipe, we get the measure of the resistance relative to the diameter. This is the aim of a prodigious number of experiments made and collected by *Buat*, and which we shall not repeat, but only give the results of the different parts of his investigation.

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Results of
De Buat's
investiga-
tion on this
subject.

We may express the slope of a pipe by the symbol $\frac{1}{s}$, 1 being an inch for instance, and s being the slant length of a pipe which is one inch more elevated at one end than at the other. Thus a river which has a declivity of an inch and a half in 120 fathoms or 8640 inches, has its slope = $\frac{1\frac{1}{2}}{8640}$, or $\frac{1}{5760}$. But in order to obtain the hydraulic slope of a conduit pipe, the heights of the reservoir and place of discharge being given, we must subtract from the difference of elevation the height or head of water necessary for propelling the water into any pipe with the velocity V , which it is supposed actually to have. This is $\frac{V^2}{505}$. The remain-

der d is to be considered as the height of the declivity, which is to be distributed equally over the whole length l of the pipe, and the slope is then $\frac{d}{l} = \frac{1}{s}$.

There is another important view to be taken of the slope, which the reader should make very familiar to his thoughts. It expresses the proportion between the weight of the whole column which is in motion and the weight which is employed in overcoming the resistance; and the resistance to the motion of any column of water is equal to the weight of that column multiplied by the fraction $\frac{1}{s}$, which expresses its slope.

47
Of the re-
sistances
which
bring the
motions to
a state of
uniformity.

We come now to consider more particularly the resistances which in this manner bring the motions to a state of uniformity. If we consider the resistances which arise from a cause analogous to friction, we see that they must depend entirely on the inertia of the

water. What we call the resistance is the diminution of a motion which *would* have obtained but for these resistances; and the best way we have of measuring them is by the force which we must employ in order to keep up or restore this motion. We estimate this motion by a progressive velocity, which we measure by the expence of water in a given time. We judge the velocity to diminish, when the quantity discharged diminishes; yet it may be otherwise, and probably is otherwise. The absolute velocity of many, if not all, of the particles, may even be increased; but many of the motions, being transverse to the general direction, the quantity of motion in this direction may be less, while the sum of the absolute motions of all the particles may be greater. When we increase the general velocity, it is not unreasonable to suppose that the impulses on all the inequalities are increased in this proportion; and the number of particles thus impelling and deflected at the same time will increase in the same proportion. The whole quantity therefore of these useless and lost motions will increase in the duplicate ratio of the velocities, and the force necessary for keeping up the motion will do so also; that is, the resistances should increase as the squares of the velocities.

Or if we consider the resistances as arising merely from the curvature of the imperceptible internal motions occasioned by the inequalities of the sides of the pipe, and as measured by the forces necessary for producing these curvilinear motions; then, because the curves will be the same whatever are the velocities, the deflecting forces will be as the squares of the velocities; but these deflecting forces are pressures, propagated from the parts urged or pressed by the external force, and are proportional to these external pressures by the principles of hydrostatics. Therefore the pressures or forces necessary for keeping up the velocities are as the squares of these velocities; and they are our only measures of the resistances which must be considered as following the same ratio. Whatever view therefore we take of the nature of these resistances, we are led to consider them as proportional to the squares of the velocities.

We may therefore express the resistances by the symbol $\frac{V^2}{m}$, m being some number to be discovered by experiment. Thus, in a particular pipe, the diminution of the motion or the resistance may be the 1000th part of the square of the velocity, and $R = \frac{V^2}{1000}$.

Now if g be the accelerating power of gravity on any particle, $\frac{g}{s}$ will be its accelerating power, by which it would urge it down the pipe whose slope is $\frac{1}{s}$. Therefore, by the principle of uniform motion, the equality of the accelerating force, and the resistance, we shall have $\frac{V^2}{m} = \frac{g}{s}$, and $V \sqrt{s} = \sqrt{mg}$; that is, the product of the velocity, and the reciprocal of the square root of the slope, or the quotient of the velocity divided by the slope, is a constant quantity $\sqrt{mg}$ for any given pipe; and the primary formula for all the uniform velocities of one pipe is $V = \frac{\sqrt{mg}}{\sqrt{s}}$.

Mr

Theory.

48
Experiments and reasoning of De Buat, respecting these resistances, &c.

Mr Buat therefore examined this by experiment, but found, that even with respect to a pipe or channel which was uniform throughout, this was not true. We could give at once the final formula which he found to express the velocity in every case whatever; but this would be too empirical. The chief steps of his very sagacious investigation are instructive. We shall therefore mention them briefly, at least as far as they tend to give us any collateral information; and let it always be noted, that the instruction which they convey is not abstract speculation, but experimental truths, which must ever remain as an addition to our stock of knowledge, although Mr Buat's deductions from them should prove false.

He found, in the first place, that in the same channel the product of V and $\sqrt{s}$ increased as $\sqrt{s}$ increased; that is, the velocities increased faster than the square roots of the slope, or the resistances did not increase as fast as the squares of the velocities. We beg leave to refer our readers to what we said on the resistance of pipes to the motion of fluids through them, in the article PNEUMATICS, when speaking of bellows. They will there see very valid reasons (we apprehend) for thinking that the resistances must increase more slowly than the squares of the velocities.

It being found, then, that $V\sqrt{s}$ is not equal to a constant quantity $\sqrt{mg}$, it becomes necessary to investigate some quantity depending on $\sqrt{s}$, or, as it is called, some function of $\sqrt{s}$, which shall render $\sqrt{mg}$ a constant quantity. Let X be this function of $\sqrt{s}$, so that we shall always have VX equal to the constant quantity $\sqrt{mg}$, or $\frac{\sqrt{mg}}{X}$ equal to the actual velocity V of a pipe or channel which is in train.

Mr Buat, after many trials and reflections, the chief of which will be mentioned by and by, found a value of X which corresponded with a vast variety of slopes and velocities, from motions almost imperceptible, in a bed nearly horizontal, to the greatest velocities which could be produced by gravity alone in a vertical pipe; and when he compared them together, he found a very discernible relation between the resistances and the magnitude of the section: that is, that in two channels which had the same slope, and the same propelling force, the velocity was greatest in the channel which had the greatest section relative to its border. This may reasonably be expected. The resistances arise from the mutual action of the water and this border. The water immediately contiguous to it is retarded, and this retards the next, and so on. It is to be expected, therefore, that if the border, and the velocity, and the slope, be the same, the diminution of this velocity will be so much the less as it is to be shared among a greater number of particles; that is, as the area of the section is greater in proportion to the extent of its border. The diminution of the general or medium velocity must be less in a cylindrical pipe than in a square one of the same area, because the border of its section is less.

It appears evident, that the resistance of each particle is in the direct proportion of the whole resistance, and the inverse proportion of the number of particles which receive equal shares of it. It is therefore directly as the

border, and inversely as the section. Therefore in the expression $\frac{V^2}{m}$ which we have given for the resistance, the quantity m cannot be constant, except in the same channel; and in different channels it must vary along with the relation of the section to its border, because the resistances diminish in proportion as this relation increases.

Without attempting to discover this relation by theoretical examination of the particular motions of the various filaments, Mr Buat endeavoured to discover it by a comparison of experiments. But this required some manner of stating this proportion between the augmentation of the section and the augmentation of its border.

His statement is this: He reduces every section to a rectangular parallelogram of the same area, and having its base equal to the border unfolded into a straight line. The product of this base by the height of the rectangle will be equal to the area of the section. Therefore this height will be a representative of this variable ratio of the section to its border (We do not mean that there is any ratio between a surface and a line: but the ratio of section to section is different from that of border to border; and it is the ratio of these ratios which is thus expressed by the height of this rectangle). If S be the section, and B the border, $\frac{S}{B}$ is evidently a line equal to the height of this rectangle. Every section being in this manner reduced to a rectangle, the perpendicular height of it may be called the HYDRAULIC MEAN DEPTH of the section, and may be expressed by the symbol d . (Buat calls it the mean radius). If the channel be a cylindrical pipe, or an open half cylinder, it is evident that d is half the radius. If the section is a rectangle, whose width is w , and height b ,

the mean depth is $\frac{wb}{b+2b}$, &c. In general, if q represent the proportion of the breadth of a rectangular canal to its depth, that is, if q be made $= \frac{w}{b}$, we shall have $d = \frac{w}{q+2}$, or $d = \frac{qb}{q+2}$.

Now, since the resistances must augment as the proportion of the border to the section augments, m in the formulas $\frac{V^2}{m} = \frac{g}{s}$ and $V\sqrt{s} = \sqrt{mg}$, must follow the proportions of d , and the quantity $\sqrt{mg}$ must be proportional to $\sqrt{d}$ for different channels, and $\frac{\sqrt{mg}}{\sqrt{d}}$ should be a constant quantity in every case.

Our author was aware, however, of a very specious objection to the close dependence of the resistance on the extent of the border; and that it might be said that a double border did not occasion a double resistance, unless the pressure on all the parts was the same. For it may be naturally (and it is generally) supposed, that the resistance will be greater when the pressure is greater. The friction or resistance analogous to friction may therefore be greater on an inch of the bottom than on an inch of the sides; but Mr D'Alembert and many others have demonstrated, that the paths of the filaments will be the same whatever be the pressures.

Theory.

49
A specious objection

Theory.

Obviated
by an ex-
periment
on the os-
cillation of
water in
syphons.

This might serve to justify our ingenious author; but he was determined to rest every thing on experiment. He therefore made an experiment on the oscillation of water in syphons, which we have repeated in the following form, which is affected by the same circumstances, and is susceptible of much greater precision, and of more extensive and important application.

The two vessels ABCD, *abcd* (fig. 9.) were connected by the syphon EFG *gfe*, which turned round in the short tubes E and *e*, without allowing any water to escape; the axes of these tubes being in one straight line. The vessels were about 10 inches deep, and the branches FG, *fg* of the syphon were about five feet long. The vessels were set on two tables of equal height, and (the hole *e* being stopped) the vessel ABCD, and the whole syphon, were filled with water, and water was poured into the vessel *abcd* till it stood at a certain height LM. The syphon was then turned into a horizontal position, and the plug drawn out of *e*, and the time carefully noted which the water employed in rising to the level HK *kh* in both vessels. The whole apparatus was now inclined, so that the water run back into ABCD. The syphon was now put in a vertical position, and the experiment was repeated. —No sensible or regular difference was observed in the time. Yet in this experiment the pressure on the part G *g* of the syphon was more than six times greater than before. As it was thought that the friction on this small part (only six inches) was too small a portion of the whole obstruction, various additional obstructions were put into this part of the syphon, and it was even lengthened to nine feet; but still no remarkable difference was observed. It was even thought that the times were less when the syphon was vertical.

51
The resist-
ance de-
pends chief-
ly on the
relation be-
tween the
section and
its border.

Thus Mr De Buat's opinion is completely justified; and he may be allowed to assert, that the resistance depends chiefly on the relation between the section and its border; and that $\frac{\sqrt{mg}}{\sqrt{d}}$ should be a constant quantity.

To ascertain this point was the object of the next series of experiments; to see whether this quantity was really constant, and, if not, to discover the law of its variation, and the physical circumstances which accompanied the variations, and may therefore be considered as their causes. A careful comparison of a very great number of experiments, made with the same slope, and with very different channels and velocities, showed that $\sqrt{mg}$ did not follow the proportion of $\sqrt{d}$, nor of any power of $\sqrt{d}$. This quantity $\sqrt{mg}$ increased by smaller degrees in proportion as $\sqrt{d}$ was greater. In very great beds $\sqrt{mg}$ was nearly proportional to $\sqrt{d}$, but in smaller channels, the velocities diminished much more than $\sqrt{d}$ did. Casting about for some way of accommodation, Mr Buat considered, that some approximation at least would be had by taking off from $\sqrt{d}$ some constant small quantity. This is evident: For such a diminution will have but a trifling effect when $\sqrt{d}$ is great, and its effect will increase rapidly when $\sqrt{d}$ is very small. He therefore tried various values for this subtraction, and compared the results with the former experiments; and he found, that if in

every case $\sqrt{d}$ be diminished by one-tenth of an inch, the calculated discharges would agree very exactly with the experiment. Therefore, instead of $\sqrt{d}$, he makes use of $\sqrt{d} - 0.1$, and finds this quantity always proportional to $\sqrt{mg}$, or finds that $\frac{\sqrt{mg}}{\sqrt{d} - 0.1}$ is a con-

stant quantity, or very nearly so. It varied from 297 to 287 in all sections from that of a very small pipe to that of a little canal. In the large sections of canals and rivers it diminished still more, but never was less than 256.

This result is very agreeable to the most distinct no-
tions that we can form of the mutual actions of the
water and its bed. We see, that when the motion of
water is obstructed by a solid body, which deflects the
passing filaments, the disturbance does not extend to
any considerable distance on the two sides of the body.
In like manner, the small disturbances, and impercep-
tible curvilinear motions, which are occasioned by the
infinitesimal inequalities of the channel, must extend to
a very small distance indeed from the sides and bottom
of the channel. We know, too, that the mutual adhe-
sion or attraction of water for the solid bodies which
are moistened by it, extends to a very small distance;
which is probably the same, or nearly so, in all cases.
Mr Buat observed, that a surface of 23 square inches,
applied to the surface of stagnant water, lifted 1601
grains; another of $5\frac{1}{2}$ square inches lifted 365: this was
at the rate of 65 grains per inch nearly, making a co-
lumn of about one-sixth of an inch high. Now this ef-
fect is very much analogous to a real contraction of the
capacity of the channel. The water may be conceived
as nearly stagnant to this small distance from the border
of the section. Or, to speak more accurately, the di-
minution of the progressive velocity occasioned by the
friction and adhesion of the sides, decreases very rapidly
as we recede from the sides, and ceases to be sensible at
a very small distance.

The writer of this article verified this by a very simple
and instructive experiment. He was making experiments
on the production of vortices, in the manner suggested by
Sir Isaac Newton, by whirling a very accurate and smooth-
ly polished cylinder in water; and he found that the rapid
motion of the surrounding water was confined to an ex-
ceeding small distance from the cylinder, and it was not
till after many revolutions that it was sensible even at
the distance of half an inch. We may, by the way,
suggest this as the best form of experiments for exami-
ning the resistances of pipes. The motion excited by
the whirling cylinder in the stagnant water is equal and
opposite to the motion lost by water passing along a
surface equal to that of the cylinder with the same velo-
city. Be this as it may, we are justified in considering,
with Mr Buat, the section of the stream as thus dimi-
nished by cutting off a narrow border all round the
touching parts, and supposing that the motion and dis-
charge is the same as if the root of the mean depth of
the section were diminished by a small quantity, nearly
constant. We see, too, that the effect of this must be
insensible in great canals and rivers; so that, fortun-
ately, its quantity is best ascertained by experiments made
with small pipes. This is attended with another con-
venience, in the opinion of Mr Buat, namely, that the
effect

Theory.

52

The result
agreeable
to our di-
stinctest no-
tions of the
action of
water and
its bed.

53

And con-
firmed by
experi-
ment.

Theory. effect of viscosity is most sensible in great masses of water in flow motion, and is almost insensible in small pipes, so as not to disturb these experiments. We may therefore assume 297 as the general value of $\frac{\sqrt{mg}}{\sqrt{d-0,1}}$.

Since we have $\frac{\sqrt{mg}}{\sqrt{d-0,1}} = 297$, we have also $m = \frac{297^2}{g} \sqrt{d-0,1}^2 = \frac{88209}{362} (\sqrt{d-0,1})^2 = 243,7 (\sqrt{d-0,1})^2$. This we may express by $n (\sqrt{d-0,1})^2$. And thus, when we have expressed the effect of friction by $\frac{V^2}{m}$, the quantity m is variable, and its general value is $\frac{V^2}{n (\sqrt{d-0,1})^2}$, in which n is an invariable abstract number equal to 243,7, given by the nature of the resistance which water sustains from its bed, and which indicates its intensity.

And, lastly, since $m = n (\sqrt{d-0,1})^2$, we have $\sqrt{mg} = \sqrt{ng} (\sqrt{d-0,1})$, and the expression of the velocity V , which water acquires and maintains along any channel whatever, now becomes $V = \frac{\sqrt{ng} (\sqrt{d-0,1})}{X}$, or $\frac{297 (\sqrt{d-0,1})}{X}$, in which

X is also a variable quantity, depending on the slope of the surface or channel, and expressing the accelerating force which, in the case of water in train, is in equilibrium with the resistances expressed by the numerator of the fraction.

54 Law of acceleration investigated. Having so happily succeeded in ascertaining the variations of resistance, let us accompany Mr Buat in his investigation of the law of acceleration, expressed by the value of X .

Experience, in perfect agreement with any distinct opinions that we can form on this subject, had already showed him, that the resistances increased in a slower ratio than that of the squares of the velocities, or that the velocities increased slower than $\sqrt{s}$. Therefore,

in the formula $V = \frac{\sqrt{ng} (\sqrt{d-0,1})}{X}$, which, for one

channel, we may express thus, $V = \frac{A}{X}$, we must admit

that X is sensibly equal to $\sqrt{s}$ when the slope is very small or s very great. But, that we may accurately express the velocity in proportion as the slope augments, we must have X greater than $\sqrt{s}$; and moreover, $\frac{\sqrt{s}}{X}$ must increase as $\sqrt{s}$ diminishes. These conditions are necessary, that our values of V , deduced from

the formula $V = \frac{A}{X}$, may agree with the experiment.

In order to comprehend every degree of slope, we must particularly attend to the motion through pipes, because open canals will not furnish us with instances of exact TRAINS with great slopes and velocities. We can make pipes vertical. In this case $\frac{1}{s}$ is $\frac{1}{1}$, and the velocity is the greatest possible for a train by the action of gravity: But we can give greater velocities than this

by increasing the head of water beyond what produces the velocity of the train. **Theory.**

Let AB (fig. 10.) be a vertical tube, and let CA be the head competent to the velocity in the tube, which we suppose to be in train. The slope is 1, and the full weight of the column in motion is the precise

measure of the resistance. The value of $\frac{1}{s}$, considered as a slope, is now a maximum; but, considered as expressing the proportion of the weight of the column in motion to the weight which is in equilibrio with the resistance, it may not be a maximum; it may surpass unity, and s may be less than 1. For if the vessel be filled to E , the head of water is increased, and will produce a greater velocity, and this will produce a greater resistance. The velocity being now greater, the head EF which imparts it must be greater than CA . But it will not be equal to EA , because the uniform velocities are found to increase faster than the square roots of the pressures. This is the general fact. Therefore F is above A , and the weight of the column FB , now employed to overcome the resistance, is greater than the weight of the column AB in motion.

In such cases, therefore, $\frac{1}{s}$, greater than unity, is a sort of fictitious slope, and only represents the proportion of the resistance to the weight of the moving column. This proportion may surpass unity.

But it cannot be infinite: For supposing the head of water infinite; if this produce a finite velocity, and we deduct from the whole height the height corresponding to this finite velocity, there will remain an infinite head, the measure of an infinite resistance produced by a finite velocity. This does not accord with the observed law of the velocities, where the resistances actually do not increase as fast as the squares of the velocities. Therefore an infinite head would have produced an infinite velocity, in opposition to the resistances: taking off the head of the tube, competent to this velocity, at the entry of the tube, which head would also be infinite, the remainder would in all probability be finite, balancing a finite resistance.

Therefore the value of s may remain finite, although the velocity be infinite; and this is agreeable to all our clearest notions of the resistances.

Adopting this principle, we must find a value of X which will answer all these conditions. 2. It must be sensibly proportional to $\sqrt{s}$, while s is great. It must always be less than $\sqrt{s}$. 3. It must deviate from the proportion of $\sqrt{s}$, so much the more as $\sqrt{s}$ is smaller. 4. It must not vanish when the velocity is infinite. 5. It must agree with a range of experiments with every variety of channel and of slope.

We shall understand the nature of this quantity X better by representing by lines the quantities concerned in forming it.

If the velocities were exactly as the square roots of the slopes, the equilateral hyperbola NKS (fig. 10. n° 2) between its asymptotes MA , AB , would represent the equation $V = \frac{A}{\sqrt{s}}$. The values of $\sqrt{s}$, would be represented by the abscissæ, and the velocities by the ordinates, and $V \sqrt{s} = A$ would be the power of the hyperbola. But since these velocities are not sensibly equal

Theory.

equal to $\frac{A}{\sqrt{s}}$ except when $\sqrt{s}$ is very great, and deviate the more from this quantity as $\sqrt{s}$ is smaller; we may represent the velocities by the ordinates of another curve PGT, which approaches very near to the hyperbola, at a great distance from A along AB; but separates from it when the abscissæ are smaller: so that if AQ represents that value of $\sqrt{s}$ (which we have seen may become less than unity), which corresponds to an infinite velocity, the line QO may be the asymptote of the new curve. Its ordinates are equal to $\frac{A}{X}$ while those of the hyperbola are equal to $\frac{A}{\sqrt{s}}$. Therefore the ratio of these ordinates or $\frac{\sqrt{s}}{X}$ should be such that it shall be so much nearer to unity as $\sqrt{s}$ is greater, and shall surpass it so much the more as $\sqrt{s}$ is smaller.

To express X therefore as some function of $\sqrt{s}$ so as to answer these conditions, we see in general that X must be less than $\sqrt{s}$. And it must not be equal to any power of $\sqrt{s}$ whose index is less than unity, because then $\frac{\sqrt{s}}{X}$ would differ so much the more from unity as $\sqrt{s}$ is greater. Nor must it be any multiple of $\sqrt{s}$ such as $q\sqrt{s}$, for the same reason. If we make $X = \sqrt{s} - K$, K being a constant quantity, we may answer the first condition pretty well. But K must be very small, that X may not become equal to nothing, except in some exceedingly small value of $\sqrt{s}$. Now the experiments will not admit of this, because the ratio $\frac{\sqrt{s}}{\sqrt{s} - K}$ does not increase sufficiently to correspond with the velocities which we observe in certain slopes, unless we make K greater than unity, which again is inconsistent with other experiments. We learn from such canvassing that it will not do to make K a constant quantity. If we should make it any fractionary power of $\sqrt{s}$, it would make $X = 0$, that is, nothing, when $s = 1$, which is also contrary to experience. It would seem, therefore, that nothing will answer for K but some power of $\sqrt{s}$ which has a variable index. The logarithm of $\sqrt{s}$ has this property. We may therefore try to make $X = \sqrt{s} - \log. \sqrt{s}$. Accordingly if we try

the equation $V = \frac{A}{\sqrt{s} - \text{hyp. log. } \sqrt{s}}$, we shall find a very great agreement with the experiments till the declivity becomes considerable, or about $\frac{1}{10}$, which is much greater than any river. But it will not agree with the velocities observed in some mill courses, and in pipes of a still greater declivity, and gives a velocity that is too small; and in vertical pipes the velocity is not above one half of the true one. We shall get rid of most of these incongruities if we make K consist of the hyperbolic logarithm of $\sqrt{s}$ augmented by a small constant quantity, and by trying various values for this constant quantity, and comparing the results with experiment, we may hit on one sufficiently exact for all practical purposes.

Mr De Buat, after repeated trials, found that he would have a very great conformity with experiment

by making $K = \log. \sqrt{s} + 1,6$, and that the velocities exhibited in his experiments would be very well represented by the formula $V = \frac{297(\sqrt{d} - 0,1)}{\sqrt{s} - L\sqrt{s} + 1,6}$.

There is a circumstance which our author seems to have overlooked on this occasion, and which is undoubtedly of great effect in these motions, viz. the mutual adhesion of the particles of water. This causes the water which is descending (in a vertical pipe for example) to drag more water after it, and thus greatly increases its velocity. We have seen an experiment in which the water issued from the bottom of a reservoir through a long vertical pipe having a very gentle taper. It was 15 feet long, one inch diameter at the upper end, and two inches at the lower. The depth of the water in the reservoir was exactly one foot; in a minute there were discharged $2\frac{1}{8}$ cubic feet of water. It must therefore have issued through the hole in the bottom of the reservoir with the velocity of 8,85 feet per second. And yet we know that this head of water could not make it pass through the hole with a velocity greater than 6,56 feet per second. This increase must therefore have arisen from the cause we have mentioned, and is a proof of the great intensity of this force. We doubt not but that the discharge might have been much more increased by proper contrivances; and we know many instances in water pipes where this effect is produced in a very great degree.

The following case is very distinct: Water is brought into the town of Dunbar in the county of East Lothian from a spring at the distance of about 3200 yards. It is conveyed along the first 1100 yards in a pipe of two inches diameter, and the declivity is 12 feet nine inches; from thence the water flows in a pipe of $1\frac{1}{2}$ diameter, with a declivity of 44 feet 3 inches, making in all 57 feet. When the work was carried as far as the two-inch pipe reached, the discharge was found to be 27 Scotch pints, of $103\frac{1}{2}$ cubic inches each in a minute. When it was brought into the town, the discharge was 28. Here it is plain that the descent along the second stretch of the pipe could derive no impulsion from the first. This was only able to supply 27 pints, and to deliver it into a pipe of equal bore. It was not equivalent to the forcing it into a smaller pipe, and almost doubling its velocity. It must therefore have been dragged into this smaller pipe by the weight of what was descending along it, and this water was exerting a force equivalent to a head of 16 inches, increasing the velocity from 14 to about 28.

It must be observed, that if this formula be just, there can be no declivity so small that a current of water will not take place in it. And accordingly none has been observed in the surface of a stream when this did not happen. But it also should happen with respect to any declivity of bottom. Yet we know that water will hang on the sloping surface of a board without proceeding further. The cause of this seems to be the adhesion of the water combined with its viscosity. The viscosity of a fluid presents a certain force which must be overcome before any current can take place.

A series of important experiments were made by our author in order to ascertain the relation between the velocity at the surface of any stream and that at the

Theory.

55

Mutual adhesion of the particles of water.

56

An actual case.

57

Proves that the smallest declivity will produce a current.

Theory. the bottom. These are curious and valuable on many accounts. One circumstance deserves our notice here, viz. that the difference between the superficial and bottom velocities of any stream are proportional to the square roots of the superficial velocities. From what has been already said on the gradual diminution of the velocities among the adjoining filaments, we must conclude that the same rule holds good with respect to the velocity of separation of two filaments immediately adjoining. Hence we learn that this velocity of separation is in all cases indefinitely small, and that we may, without danger of any sensible error, suppose it a constant quantity in all cases.

58
A constant part of the accelerating force employed in overcoming the viscosity, &c.

We think, with our ingenious author, that on a review of these circumstances, there is a constant or invariable portion of the accelerating force employed in overcoming this viscosity and producing this mutual separation of the adjoining filaments. We may express

this part of the accelerating force by a part $\frac{1}{S}$ of that slope which constitutes the whole of it. If it were not employed in overcoming this resistance, it would produce a velocity which (on account of this resistance)

is not produced, or is lost. This would be $\frac{A}{\sqrt{S-L}\sqrt{S}}$. This must therefore be taken from the velocity exhibited by our general formula. When thus corrected, it would become $V = (\sqrt{d}-0,1) \left(\frac{\sqrt{ng}}{\sqrt{S-L}\sqrt{S}+1,6} - \frac{\sqrt{ng}}{\sqrt{S-L}\sqrt{S}} \right)$. But as the term $\frac{\sqrt{ng}}{\sqrt{S-L}\sqrt{S}}$ is

compounded only of constant quantities, we may express it by a single number. This has been collected from a scrupulous attention to the experiments (especially in canals and great bodies of water moving with very small velocities; in which case the effects of viscosity must become more remarkable), and it appears

that it may be valued at $\sqrt{\frac{\text{inch}}{0,09}}$, or 0,3 inches very nearly.

From the whole of the foregoing considerations, drawn from nature, supported by such reasoning as our most distinct notions of the internal motions will admit, and authorised by a very extensive comparison with experiment, we are now in a condition to conclude a complete formula, expressive of the uniform motion of water, and involving every circumstance which appears to have any share in the operation.

Therefore let

59
Formula expressing the uniform motion of water.

V represent the mean velocity, in inches per second, of any current of water, running uniformly, or which is IN TRAIN, in a pipe or open channel, whose section, figure, and slope, are constant, but its length indefinite.

d the hydraulic mean depth, that is, the quotient arising from dividing the section of the channel, in square inches, by its border, expressed in linear inches.

s The slope of the pipe, or of the surface of the current. It is the denominator of the fraction expressing this slope, the numerator being always unity; and is had by dividing the expanded length of the pipe or channel by the difference of height of its two extremities.

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g The velocity (in inches per second) which a heavy body acquires by falling during one second.

n An abstract constant number, determined by experiment to be 243,7.

L the hyperbolic logarithm of the quantity to which it is prefixed, and is had by multiplying the common logarithm of that quantity by 2,3026.

We shall have in every instance

$$V = \frac{\sqrt{ng}(\sqrt{d}-0,1)}{\sqrt{s-L}\sqrt{s+1,6}} - 0,3(\sqrt{d}-0,1)$$

This, in numbers, and English measure, is

$$V = \frac{307(\sqrt{d}-0,1)}{\sqrt{s-L}\sqrt{s+1,6}} - 0,3(\sqrt{d}-0,1)$$

And in French measure

$$V = \frac{297(\sqrt{d}-0,1)}{\sqrt{s-L}\sqrt{s+1,6}} - 0,3(\sqrt{d}-0,1)$$

The following table contains the real experiments from which this formula was deduced, and the comparison of the real velocities with the velocities computed by the formula. It consists of two principal sets of experiments. The first are those made on the motion of water in pipes. The second are experiments made on open canals and rivers. In the first set, column 1st contains the number of the experiment; 2d, the length of the tube; 3d, the height of the reservoir; 4th, the values of S , deduced from column second and third; 5th gives the observed velocities; and 6th the velocities calculated by the formula.

In the second set, column 2d gives the area of the section of the channel; 3d, the border of the canal or circumference of the section, deducting the horizontal width, which sustains no friction; 4th, the square root $\sqrt{d}$ of the hydraulic mean depth; 5th, the denominator S of the slope; 6th, the observed mean velocities; and 7th, the mean velocities by the formula. In the last ten experiments on large canals and a natural river the 6th column gives the observed velocities at the surface.

SET I. Experiments on Pipes.

Experiments by Chevalier DE BUAT.

N ^o	Length of Pipe.	Height of Reservoir.	Values of s .	Velocities observed.	Velocities calculated.
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Vertical Tube $\frac{2}{3}$ of a Line in Diameter and $\sqrt{d} = 0,117851$.

	Inch.	Inch.	Inch.	Inch.	Inch.
1	12	16,166	0,75636	11,704	12,006
2	12	13,125	0,9307	9,753	10,576

Vertical Pipe $1\frac{1}{2}$ Lines Diameter, and $\sqrt{d} = 0,176776$ Inch.

3	34,166	42,166	0,9062	45,468	46,210
4	Do.	38,333	0,9951	43,156	43,721
5	Do.	36,666	1,0396	42,385	42,612
6	Do.	35,333	1,0781	41,614	41,714

60
Table containing the experiments from which the formula is deduced.

The same Pipe horizontal.

N ^o	Length of Pipe	Height of Reservoir	Values of s	Velocities observed.	Velocities calculated.
	Inch.	Inch.	Inch.	Inch.	Inch.
7	34,166	14,583	2,5838	26,202	25,523
8	Do.	9,292	4,0367	21,064	19,882
9	Do.	5,292	7,036	14,642	14,447
10	Do.	2,083	17,6378	7,320	2,351

Vertical Pipe 2 Lines Diameter, and $\sqrt{d}=0,204124$.

11	36,25	51,250	0,85451	64,373	64,945
12	Do.	45,250	0,96338	59,605	60,428
13	Do.	41,916	1,03808	57,220	57,838
14	Do.	38,750	1,12047	54,186	55,321

Same Pipe with a slope of $\frac{1}{1,3024}$.

15	36,25	33,500	1,29174	51,151	50,983
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Same Pipe horizontal.

16	36,25	15,292	2,7901	33,378	33,167
17	Do.	8,875	4,76076	25,430	24,553
18	Do.	5,292	7,89587	19,940	18,313
19	Do.	2,042	20,01637	10,620	10,492

Vertical Pipe 2 $\frac{9}{10}$ Lines Diameter, and $\sqrt{d}=0,245798$.

20	36,25	53,250	0,95235	85,769	85,201
21	Do.	50,250	1,00642	82,471	82,461
22	Do.	48,333	1,0444	81,646	80,698
23	Do.	48,333	1,0444	79,948	
24	Do.	47,916	1,0529	81,027	80,318
25	Do.	44,750	1,1241	76,079	77,318
26	Do.	41,250	1,2157	73,811	73,904

The same Pipe with the slope $\frac{1}{1,3024}$.

27	36,25	37,5	1,3323	70,822	70,138
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The same Pipe Horizontal.

28	36,25	20,166	2,4303	51,956	50,140
29	Do.	9,083	5,2686	33,577	32,442
30	Do.	7,361	6,4504	28,658	28,801
31	Do.	5,	9,3573	23,401	23,195
32	Do.	4,916	9,5097	22,989	22,974
33	Do.	4,833	9,6652	22,679	22,754
34	Do.	3,708	12,4624	19,587	19,550
35	Do.	2,713	16,3135	16,631	16,324
36	Do.	2,083	21,6639	14,295	14,003
37	Do.	1,625	27,5102	12,680	12,115
38	Do.	0,833	52,3427	7,577	8,215

Pipes sensibly Horizontal $\sqrt{d}=0,5$, or 1 Inch Diameter.

39	117	36	5,6503	84,945	85,524
40	117	26,666	7,48	71,301	72,617
41	138,5	20,950	10,3215	58,808	60,034
42	117	18	10,7880	58,310	58,472

N ^o	Length of Pipe.	Height of Reservoir.	Values of s .	Velocities observed	Velocities calculated.
	Inch.	Inch.	Inch.	Inch.	Inch.
43	138,5	6	33,1962	29,341	29,663
44	737	23,7	33,6658	28,669	29,412
45	Do.	14,6	54,2634	21,856	22,056
46	Do.	13,7	57,7772	20,970	21,240
47	Do.	12,32	64,1573	19,991	19,950
48	Do.	8,96	87,8679	16,6252	16,543
49	Do.	8,96		16,2845	
50	Do.	7,780	101,0309	15,112	15,232
51	Do.	5,93	132,1617	13,315	13,005
52	Do.	4,2	186,0037	10,6712	10,656
53	Do.	4,2		10,4415	
54	138,5	0,7	257,8863	8,689	8,824
55	737	0,5	1540,75	3,623	3,218
56	737	0,15	5113,42	1,589	1,647

Experiments by the Abbé BOSSUT.

Horizontal Pipe 1 Inch Diameter $\sqrt{d}=0,5$.

57	600	12	54,5966	22,282	21,975
58	600	4	161,312	12,223	11,756

Horizontal Pipe 1 $\frac{1}{2}$ Inch Diameter $\sqrt{d}=0,5774$.

59	360	24	19,0781	48,534	49,515
60	720	24	33,6166	34,473	35,130
61	360	12	37,0828	33,160	33,106
62	1080	24	48,3542	28,075	28,211
63	1440	24	63,1806	24,004	24,023
64	720	12	66,3020	23,360	23,345
65	1800	24	78,0532	21,032	21,182
66	2160	24	92,9474	18,896	19,096
67	1080	12	95,8756	18,943	18,749
68	1440	12	125,6007	16,128	15,991
69	1800	12	155,4015	14,066	14,119
70	2160	12	185,2487	12,560	12,750

Horizontal Pipe 2,01 Inch Diameter $\sqrt{d}=0,708946$.

71	360	24	21,4709	58,903	58,803
72	720	24	35,8082	43,	43,136
73	360	12	41,2759	40,322	39,587
74	1080	24	50,4119	35,765	35,096
75	1440	24	65,1448	30,896	30,096
76	720	12	70,1426	29,215	28,796
77	1800	24	79,8487	27,470	26,639
78	2160	24	94,7901	27,731	24,079
79	1080	12	99,4979	23,806	23,400
80	1440	12	129,0727	20,707	20,076
81	1800	12	158,7512	18,304	17,788
82	2160	12	188,5179	16,377	16,097

MR COUPLET's Experiments at Versailles.

Pipe 5 Inches Diameter $\sqrt{d}=1,11803$.

83	84240	25	3378,26	5,323	5,287
84	Do.	24	3518,98	5,213	5,168
85	Do.	21,083	4005,66	4,806	4,807
86	Do.	16,750	5041,61	4,127	4,225
87	Do.	11,333	7450,42	3,154	3,388
88	Do.	5,583	15119,96	2,011	2,254

Pipe 18 Inches Diameter $\sqrt{d}=2,12132$.

89	43200	145,083	304,973	39,159	40,510
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SET.

SET II. *Experiments with a Wooden Canal.*

N ^o	Section of Canal.	Border of Canal.	Values of $\sqrt{d}$.	Values of s .	Mean Velocity observed	Mean Veloc. calc.
<i>Trapezium Canal.</i>						
	Inch.	Inch.	Inch.	Inch.	Inch.	In. h.
0	18,84	13,06	1,20107	212	27,51	27,19
91	50,60	29,50	1,3096	212	28,92	29,88
92	83,43	26	1,7913	412	27,14	28,55
93	27,20	15,31	1,3329	427	18,28	20,39
94	39,36	18,13	1,4734	427	20,30	22,71
95	50,44	20,37	1,5736	427	22,37	24,37
96	56,43	21,50	1,6201	427	23,54	25,14
97	98,74	28,25	1,8696	432	28,29	29,06
98	100,74	28,53	1,8791	432	28,52	29,23
99	119,58	31,06	1,9622	432	30,16	30,60
100	126,20	31,91	1,9887	432	31,58	31,03
101	130,71	32,47	2,0064	432	31,89	31,32
102	135,32	33,03	2,0241	432	32,52	31,61
103	20,83	13,62	1,2367	1728	8,94	8,58
104	34,37	17,	1,4219	1728	9,71	9,98
105	36,77	17,56	1,4471	1728	11,45	10,17
106	42,01	18,69	1,4992	1728	12,34	10,53

Rectangular Canal.

107	34,50	21,25	1,27418	458	20,24	18,66
108	86,25	27,25	1,77908	458	28,29	26,69
109	34,50	21,25	1,27418	929	13,56	12,53
110	35,22	21,33	1,28499	1412	9,20	10,01
111	51,75	23,25	1,49191	1412	12,10	11,76
112	76,19	26,08	1,70921	1412	14,17	13,59
113	105,78	29,17	1,90427	1412	15,55	15,24
114	69,	25,25	1,65308	9288	4,59	4,56
115	155,25	35,25	2,09868	9288	5,70	5,86

SET III. *Experiments on the Canal of JARD.*

N ^o	Section of Canal.	Border of Canal.	Values of $\sqrt{d}$.	Values of s .	Velocity obs. at Surface.	Velocity calculated.
116	16252	402	6,3583	8919	17,42	18,77
117	11905	366	5,70320	11520	12,17	14,52
118	10475	360	5,3942	15360	15,74	11,61
119	7858	340	4,8074	21827	9,61	8,38
120	7376	337	4,6784	27648	7,79	7,07
121	6125	324	4,3475	27648	7,27	6,55

Experiments on the River Haine.

N ^o	Section of River.	Border of River	Values of $\sqrt{d}$.	Values of s .	Velocity at Surface.	Veloc. (mean) calcul.
122	31498	569	7,43974	6048	35,11	27,62
123	38838	601	8,03879	6413	31,77	28,76
124	30905	568	7,37632	32951	13,61	10,08
125	39639	604	8,10108	35723	15,96	10,53

This comparison must be acknowledged to be most satisfactory, and shows the great penetration and address of the author, in so successfully lifting and appreciating the share which each co-operating circumstance has had in producing the very intricate and complicated effect. It adds some weight to the principles on which he has proceeded in this analysis of the mechanism of hydraulic motion, and must give us great confidence in a theory so fairly established on a very copious induction. The author offers it only as a rational and well-founded probability. To this character it is certainly intitled; for the suppositions made in it are agreeable to the most distinct notions we can form of these internal motions. And it must always be remembered that the investigation of the formula, although it be rendered somewhat more perspicuous by thus having recourse to those notions, has no dependence on the truth of the principles. For it is, in fact, nothing but a classification of experiments, which are grouped together by some one circumstance of slope, velocity, form of section, &c. in order to discover the law of the changes which are induced by a variation of the circumstances which do not resemble. The procedure was precisely similar to that of the astronomer when he deduces the elements of an orbit from a multitude of observations. This was the task of Mr de Buat; and he candidly and modestly informs us, that the finding out analytical forms of expression which would exhibit these changes was the work of Mr Benezech de St Honoré, a young officer of engineers, and his colleague in the experimental course. It does honour to his skill and address; and we think the whole both a pretty and instructive specimen of the method of discovering the laws of nature in the midst of complicated phenomena. Daniel Bernoulli first gave the rules of this method, and they have been greatly improved by Lambert, Condorcet, and De la Grange. Mr Coulomb has given some excellent examples of their application to the discovery of the laws of friction, of magnetical and electrical attraction, &c. But this present work is the most perspicuous and familiar of them all. It is the empirical method of generalising natural phenomena, and of deducing general rules, of which we can give no other demonstration but that they are faithful representations of matters of fact. We hope that others, encouraged by the success of Mr de Buat, will follow this example, where public utility is preferred to a display of mathematical knowledge.

Although the author may not have hit upon the precise *modus operandi*, we agree with him in thinking that nature seems to act in a way not unlike what is here supposed. At any rate, the range of experiments is so extensive, and so multifarious, that few cases can occur which are not included among them. The experiments will always retain their value (as we presume that they are faithfully narrated), whatever may become of the theory; and we are confident that the formula will give an answer to any question to which it may be applicable infinitely preferable to the vague guesses of the most sagacious and experienced engineer.

We must however observe, that as the experiments on pipes were all made with scrupulous care in the contrivance and execution of the apparatus, excepting only those of Mr Couplet on the main pipes at Versailles,

Theory. we may presume that the formula gives the greatest velocities which can be expected. In ordinary works, where joints are rough or leaky, where drops of solder hang in the inside, where cocks intervene with deficient water-ways, where pipes have awkward bendings, contractions, or enlargements, and where they may contain sand or air, we should reckon on a smaller velocity than what results from our calculation; and we presume that an undertaker may with confidence promise $\frac{4}{5}$ of this quantity without any risk of disappointing his employer. We imagine that the actual performance of canals will be much nearer to the formula.

63
The velocity given by the formula is too large for ordinary works.

We have made inquiry after works of this kind executed in Britain, that we might compare them with the formula. But all our canals are locked and without motion; and we have only learned by an accidental information from Mr Watt, that a canal in his neighbourhood, which is 18 feet wide at the surface, and seven feet at the bottom, and four feet deep, and has a slope of one inch in a quarter of a mile, runs with the velocity of 17 inches per second at the surface, 10 at the bottom, and 14 in the middle. If we compute the motion of this canal by our formula, we shall find the mean velocity to be 13 $\frac{1}{4}$.

No river in the world has had its motions so much scrutinised as the Po about the end of the last century. It had been a subject of 100 years continual litigation between the inhabitants of the Bolognese and the Ferrarese, whether the waters of the Rheno should be thrown into the Tronco de Venezia or Po Grande. This occasioned very numerous measures to be taken of its sections and declivity, and the quantities of water which it contained in its different states of fullness. But, unfortunately, the long established methods of measuring waters, which were in force in Lombardy, made no account of the velocity, and not all the intreaties of Castelli, Grandi, and other moderns, could prevail on the visitors in this process to deviate from the established methods. We have therefore no minute accounts of its velocity, though there are many rough estimates to be met with in that valuable collection published at Florence in 1723, of the writings on the motion of rivers. From them we have extracted the *only precise observations* which are to be found in the whole work.

64
Observations on the velocity of the Po

The Po Grande receives no river from Stellata to the sea, and its slope in that interval is found most surprisingly uniform, namely six inches in the mile (reduced to English measure). The breadth in its great freshes is 759 feet at Lago Scuro, with a very uniform depth of 31 feet. In its lowest state (in which it is called *Po Magra*), its breadth is not less than 700, and its depth about 10 $\frac{1}{2}$.

The Rheno has a uniform declivity from the Ponte Emilio to Vigarano of 15 inches per mile. Its breadth in its greatest freshes is 189 feet, and its depth 9.

Signor Corrade in his report says, that in the state of the great freshes the velocity of the Rheno is most exactly $\frac{4}{5}$ of that of the Po.

Grandi says that a great fresh in the Rheno employs 12 hours (by many observations of his own) to come from Ponte Emilio to Vigarano, which is 30 miles. This is a velocity of 44 inches per second. And, by Corrade's proportion, the velocity of the Po Grande must be 55 inches per second.

Montanari's observation gives the Po Magra a velocity of 31 inches per second.

Let us compare these velocities with the velocities calculated by Buat's formula.

Theory.

The hydraulic mean depths d and D of the Rheno and Po in the great freshes deduced from the above measures, are 98,6 and 344 inches; and their slopes s and S are $\frac{1}{1114}$ and $\frac{1}{15565}$. This will give

$$\frac{307 (\sqrt{D} - 0,1)}{\sqrt{S} - L\sqrt{S+1,6}} - 0,3 (\sqrt{D} - 0,1) = 52,176 \text{ inches}$$

$$\text{and } \frac{307 (\sqrt{d} - 0,1)}{\sqrt{s} - L\sqrt{s+1,6}} - 0,3 (\sqrt{d} - 0,1) = 46,727 \text{ inches.}$$

These results differ very little from the velocities above mentioned. And if the velocity corresponding to a depth of 31 feet be deduced from that observed by Montanari in the Po Magra 10 feet deep, on the supposition that they are in the proportion of $\sqrt{d}$, it will be found to be about 53 $\frac{1}{2}$ inches per second.

This comparison is therefore highly to the credit of the theory, and would have been very agreeable to M. de Buat, had he known it, as we hope it is to our readers.

65
Highly to the credit of the theory.

We have collected many accounts of water pipes, and made the comparisons, and we flatter ourselves that these have enabled us to improve the theory. They shall appear in their proper place; and we may just observe here, that the two-inch pipe, which we formerly spoke of as conveying the water to Dunbar, should have yielded only 25 $\frac{3}{4}$ Scotch pints per minute by the formula, instead of 27; a small error.

We have, therefore, no hesitation in saying that this single formula of the uniform motion of water is one of the most valuable presents which natural science and the arts have received during the course of this century.

We hoped to have made this fortunate investigation of the chevalier de Buat still more acceptable to our readers by another table, which should contain the values of

$$\frac{307}{\sqrt{s} - L\sqrt{s+1,6}}$$

ready calculated for every declivity that can occur in water pipes, canals, or rivers. Aided by this, which supercedes the only difficult part of the computation, a person could calculate the velocity for any proposed case in less than two minutes. But we have not been able to get it ready for its appearance in this article, but we shall not fail to give it when we resume the subject in the article *WATER-Works*; and we hope even to give its results on a scale which may be carried in the pocket, and will enable the unlearned practitioner to solve any question with accuracy in half a minute.

We have now established in some measure a THEORY OF HYDRAULICS, by exhibiting a general theorem which expresses the relation of the chief circumstances of all such motions as have attained a state of permanency, in so far as this depends on the magnitude, form, and slope of the channel. This permanency we have expressed by the term TRAIN, saying that the stream is *in train*.

We proceed to consider the subordinate circumstances contained in this theorem; such as, 1 $^{\text{st}}$, The forms which nature or art may give to the bed of a running stream, and the manner of expressing this form in our theorem. 2 $^{\text{d}}$, The gradations of the velocity, by which

Theory. it decreases in the different filaments, from the axis or most rapid filament to the border; and the connection of this with the mean velocity, which is expressed by our formula. 3d, Having acquired some distinct notions of this, we shall be able to see the manner in which undisturbed nature works in forming the beds of our rivers, the forms which she affects, and which we must imitate in all their local modifications, if we would secure that permanency which is the evident aim of all her operations. We shall here learn the mutual action of the current and its bed, and the circumstances which ensure the stability of both. These we may call the *regimen* or the *conservation* of the stream, and may say that it is *in regimen*, or *in conservation*. This has a relation, not to the dimensions and the slope alone, or to the accelerating force and the resistance arising from mere inertia; it respects immediately the tenacity of the bed, and is different from *the train*.

66
Regimen
of streams
what.

4th, These pieces of information will explain the deviation of rivers from the rectilineal course; the resistance occasioned by these deviations; and the circumstances on which the regimen of a winding stream depends.

§ 1. Of the Forms of the Channel.

67
The semi-
circular
form most
favourable
to motion,

THE numerator of the fraction which expresses the velocity of a river in train has $\sqrt{a}$ for one of its factors. That form, therefore, is most favourable to the motion which gives the greatest value to what we have called the hydraulic mean depth d . This is the prerogative of the semicircle, and here d is equal to half the radius; and all other figures of the same area are the more favourable, as they approach nearer to a semicircle. This is the form, therefore, of all conduit pipes, and should be taken for aqueducts which are built of masonry. Ease and accuracy of execution, however, have made engineers prefer a rectangular form; but neither of these will do for a channel formed out of the ground. We shall soon see that the semicircle is incompatible with a regimen; and, if we proceed through the regular polygons, we shall find that the half hexagon is the only one which has any pretensions to a regimen; yet experience shows us, that even its banks are too steep for almost any soil. A dry earthen bank, not bound together by grass roots, will hardly stand with a slope of 45 degrees; and a canal which conveys running waters will not stand with this slope. Banks whose base is to their height as 4 to 3 will stand very well in moist soils, and this is a slope very usually given. This form is even affected in the spontaneous operations of nature, in the channels which she digs for the rills and rivulets in the higher and steeper grounds.

68
But incom-
patible
with regi-
men.

69
Banks that
stand best.

This form has some mathematical and mechanical properties which intitle it to some further notice. Let ABEC (fig. 11.) be such a trapezium, and AHGC the rectangle of equal width and depth. Bisect HB and EG by the verticals FD and KI, and draw the verticals bB, eE. Because AH:HB=3:4, we have AB=5, and BD=2, and FD=3, and BD+DF=BA. From these premisses it follows, that the trapezium ABEC has the same area with the rectangle; for HB being bisected in D, the triangles ACF, BCD are equal. Also the border ABEC, which is touched by the passing stream, is equal to FDIK. Therefore the mean depth, which is the quotient of the area divided by the border, is the same in both; and this is the

case, whatever is the width BE at the bottom, or even though there be no rectangle such as bBEe interposed between the slant sides.

Theory.

Of all rectangles, that whose breadth is twice the height, or which is half of a square, gives the greatest mean depth. If, therefore, FK be double of FD, the trapezium ABEC, which has the same area, will have the largest mean depth of any such trapezium, and will be the best form of a channel for conveying running waters. In this case, we have AC=10, AH=3, and BE=2. Or we may say that the best form is a trapezium, whose bottom width is $\frac{2}{3}$ of the depth, and whose extreme width is $\frac{4}{3}$. This form approaches very near to that which the torrents in the hills naturally dig for themselves in uniform ground, where their action is not checked by stones which they lay bare, or which they deposit in their course. This shows us, and it will be fully confirmed by and by, that the channel of a river is not a fortuitous thing, but has a relation to the consistency of the soil and velocity of the stream.

Best form
of a chan-
nel.

A rectangle, whose breadth is $\frac{4}{3}$ of the depth of water, will therefore have the same mean depth with a triangle whose surface width is $\frac{8}{3}$ of its vertical depth; for this is the dimensions when the rectangle bBEe is taken away.

Let A be the area of the section of any channel, w its width (when rectangular), and b its depth of water. Then what we have called its mean depth, or d , will be

$\frac{A}{w+2b} = \frac{wb}{w+2b}$. Or if q expresses the ratio of the width to the depth of a rectangular bed; that is, if $q = \frac{w}{b}$, we have a very simple and ready expression for the mean depth, either from the width or depth. For $d = \frac{w}{q+2}$, or $d = \frac{qb}{q+2}$.

Therefore, if the depth were infinite, and the width finite, we should have $d = \frac{w}{2}$; or if the width be infi-

nite, and the depth finite, we have $d = b$. And these are the limits of the values of d ; and therefore, in rivers whose width is always great in comparison of the depth, we may without much error take their real depth for their hydraulic mean depth. Hence we derive a rule of easy recollection, and which will at all times give us a very near estimate of the velocity and expence of a running stream, viz. that the velocities are nearly as the square roots of the depths. We find this confirmed by many experiments of Michelotti.

71
Estimate
of the ex-
pence of a
running
stream.

Also, when we are allowed to suppose this ratio of the velocities and depths, that is, in a rectangular canal of great breadth and small depth, we shall have the quantities discharged nearly in the proportion of the cubes of the velocities. For the quantity discharged d is as the velocity and area jointly, that is, as the height and velocity jointly, because when the width is the same the area is as the height. Therefore, we have $d \propto bv$. But, by the above remark, $b \propto v^2$. Therefore, $d \propto v^3$; and this is confirmed by the experiments of Bossut, vol. ii. 236. Also, because d is as vb , when w is constant, and by the above remark (allowable when w is very great in proportion to b) v is as $\sqrt{b}$, we have d as $b\sqrt{b}$, or $b^{\frac{3}{2}}$, or the squares of the discharges pro-

Theory. proportional to the cubes of the heights in rectangular beds, and in their corresponding trapeziums.

72 Rules for

1. Knowing the mean depth and the proportion of the width and real depth, we can determine the dimensions of the bed, and we have $w = qd + 2d$, and $b = d$

$$+ \frac{2d}{q}.$$

2. If we know the area and mean depth, we can in like manner find the dimensions, that is, w and b ; for

$$A = wb, \text{ and } d = \frac{wb}{w + 2b}; \text{ therefore } w = \frac{+\sqrt{A^2 - 2Ad}}{4d^2} - 2A$$

$$+ \frac{A}{2d}$$

3. If d be known, and one of the dimensions be given, we can find the other; for $d = \frac{wb}{w + 2b}$ gives

$$w = \frac{2bd}{b - d}, \text{ and } b = \frac{wd}{w - 2d}.$$

73 Mean depth,

4. If the velocity V and the slope S for a river in train be given, we can find the mean depth; for $V =$

$$\left(\frac{297}{\sqrt{S - L\sqrt{S + 1,6}}} - 0,3 \right) (\sqrt{d} - 0,1). \text{ Whence}$$

$$\text{we deduce } \sqrt{d} - 0,1 = \frac{V}{\frac{297}{\sqrt{S - L\sqrt{S + 1,6}}} - 0,3}, \text{ and}$$

$$\sqrt{d} = \text{to this quantity} + 0,1.$$

74 And slope.

5. We can deduce the slope which will put in train a river whose channel has given dimensions. We make

$$\frac{297(\sqrt{d} - 0,1)}{V + 0,3(\sqrt{d} - 0,1)} = \sqrt{S}. \text{ This should be } \sqrt{S}$$

$- L\sqrt{S + 1,6}$, which we correct by trials, which will be exemplified when we apply these doctrines to practice.

Having thus established the relation between the different circumstances of the form of the channel to our general formula, we proceed to consider,

§ 2. The gradations of velocity from the middle of the stream to the sides.

THE knowledge of this is necessary for understanding the regimen of a river; for it is the velocity of the filaments in contact with the bed which produces any change in it, and occasions any preference of one to another, in respect of regimen or stability. Did these circumstances not operate, the water, true to the laws of hydraulics, and confined within the bounds which have been assigned them, would neither enlarge nor diminish the area of the channel. But this is all that we can promise of waters perfectly clear, running in pipes or hewn channels. But rivers, brooks, and smaller streams, carry along waters loaded with mud or sand, which they deposit wherever their velocity is checked; and they tear up, on the other hand, the materials of the channel wherever their velocity is sufficiently great. Nature, indeed, aims continually at an equilibrium, and works without ceasing to perpetuate her own performances, by establishing an equality of action and reaction, and proportioning the forms and direction of the motions to her agents, and to local circumstances. Her work is slow but unceasing; and what she cannot ac-

complish in a year she will do in a century. The beds of our rivers have acquired some stability, because they are the labour of ages; and it is to time that we owe those deep and wide valleys which receive and confine our rivers in channels, which are now consolidated, and with slopes which have been gradually moderated, so that they no longer either ravage our habitations or confound our boundaries. Art may imitate nature, and by directing her operations (which she still carries on according to her own imprescriptible laws) according to our views, we can hasten her progress, and accomplish our purpose, during the short period of human life. But we can do this only by studying the unalterable laws of mechanism. These are presented to us by spontaneous nature. Frequently we remain ignorant of their foundation: but it is not necessary for the prosperity of the subject that he have the talents of the senator; he can profit by the statute without understanding its grounds. It is so in the present instance. We have not as yet been able to infer the law of retardation observed in the filaments of a running stream from any sound mechanical principle. The problem, however, does not appear beyond our powers, if we assume, with Sir Isaac Newton, that the velocity of any particular filament is the arithmetical mean between those of the filaments immediately adjoining. We may be assured, that the filament in the axis of an inclined cylindrical tube, of which the current is in train, moves the fastest, and that all those in the same circumference round it are moving with one velocity, and that the slowest are those which glide along the pipe. We may affirm the same thing of the motions in a semi-cylindrical inclined channel conveying an open stream. But even in these we have not yet demonstrated the ratio between the extreme velocities, nor in the different circles. This must be decided experimentally.

And here we are under great obligations to Mr de Buat. He has compared the velocity in the axis of a prodigious number and variety of streams, differing in size, form, slope, and velocity, and has computed in them all the mean velocity, by measuring the quantities of water discharged in a given time. His method of measuring the bottom velocity was simple and just. He threw in a gooseberry, as nearly as possible, of the same specific gravity with the water. It was carried along the bottom almost without touching it. See *RESISTANCE of Fluids*, n° 67.

He discovered the following laws: 1. In small velocities the velocity in the axis is to that at the bottom in a ratio of considerable inequality. 2. This ratio diminishes as the velocity increases, and in very great velocities approaches to the ratio of equality. 3. What was most remarkable was, that neither the magnitude of the channel, nor its slope, had any influence in changing this proportion, while the mean velocity remained the same. Nay, though the stream ran on a channel covered with pebbles or coarse sand, no difference worth minding was to be observed from the velocity over a polished channel. 4. And if the velocity in the axis is constant, the velocity at the bottom is also constant, and is not affected by the depth of water or magnitude of the stream. In some experiments the depth was thrice the width, and in others the width was thrice the depth. This changed the proportion of the magnitude of the

⁷⁷ Theory. section to the magnitude of the rubbing part, but made no change on the ratio of the velocities. This is a thing which no theory could point out.

Mean velocity. Another most important fact was also the result of his observation, viz. that *the mean velocity in any pipe or open stream is the arithmetical mean between the velocity in the axis and the velocity at the sides of a pipe or bottom of an open stream.* We have already observed, that the ratio of the velocity in the axis to the velocity at the bottom diminished as the mean velocity increased. This variation he was enabled to express in a very simple manner, so as to be easily remembered, and to enable us to tell any one of them by observing another.

If we take unity from the square root of the superficial velocity, expressed in inches, the square of the remainder is the velocity at the bottom; and the mean velocity is the half sum of these two. Thus, if the velocity in the middle of the stream be 25 inches per second, its square root is five; from which if we take unity, there remains four. The square of this, or 16, is the velocity at the bottom, and $\frac{25 + 16}{2}$, or $20\frac{1}{2}$, is the mean velocity.

This is a very curious and most useful piece of information. The velocity in the middle of the stream is the easiest measured of all, by any light small body floating down it; and the mean velocity is the one which regulates the train, the discharge, the effect on machines, and all the most important consequences.

⁷⁸ Expressed by a formula. We may express this by a formula of most easy recollection. Let V be the mean velocity, v the velocity in the axis, and u the velocity at the bottom; we

have $u = \sqrt{v - 1}$, and $V = \frac{v + u}{2}$.

Also $v = (\sqrt{V - \frac{1}{2}} + \frac{1}{2})^2$, and $v = (\sqrt{u} + 1)^2$.

$V = (\sqrt{v - \frac{1}{2}})^2 + \frac{1}{4}$, and $V = (\sqrt{u} + \frac{1}{2})^2 + \frac{1}{4}$.

$u = (\sqrt{v} - 1)^2$ and $u = (\sqrt{V - \frac{1}{2}} - \frac{1}{2})^2$.
Also $v - u = 2\sqrt{V - \frac{1}{2}}$ and $v - V = V - u = \sqrt{V - \frac{1}{2}}$: that is, the difference between these velocities increases in the ratio of the square roots of the mean velocities diminished by a small constant quantity.

This may perhaps give the mathematicians some help in ascertaining the law of degradation from the axis to the sides. Thus, in a cylindrical pipe, we may conceive the current as consisting of an infinite number of cylindrical shells sliding within each other like the draw tubes of a spy-glass. Each of these is in equilibrio, or as much accelerated by the one within it as it is retarded by the one without; therefore as the momentum of each diminishes in the proportion of its diameter (the thickness being supposed the same in all), the velocity of separation must increase by a certain law from the sides to the axis. The magnitude of the small constant quantity here spoken of seems to fix this law.

The place of the mean velocity could not be discovered with any precision. In moderate velocities it was not more than one-fourth or one-fifth of the depth distant from the bottom. In very great velocities it was sensibly higher, but never in the middle of the depth.

The knowledge of these three velocities is of great importance. The superficial velocity is easily observed; hence the mean velocity is easily computed. This multiplied by the section gives the expence; and if we also measure the expanded border, and then obtain the mean depth (or $\sqrt{d}$), we can, by the formula of uniform motion, deduce the slope; or, knowing the slope, we can deduce any of the other circumstances.

The following table of these three velocities will save the trouble of calculation in one of the most frequent questions of hydraulics.

Velocity

80
Table of
the three
principal
velocities.

Velocity in Inches.			Velocity in Inches.			Velocity in Inches.		
Sur- face.	Bottom.	Mean.	Sur- face.	Bottom.	Mean.	Sur- face.	Bottom.	Mean.
1	0,000	0,5	34	23,330	28,660	67	51,639	59,319
2	0,172	1,081	35	24,167	29,583	68	52,505	60,252
3	0,537	1,768	36	25,	30,5	69	53,392	61,196
4	1,	2,5	37	25,827	31,413	70	54,273	62,136
5	1,526	3,263	38	26,667	32,333	71	55,145	63,072
6	2,1	4,050	39	27,51	33,255	72	56,025	64,012
7	2,709	4,854	40	28,345	34,172	73	56,862	64,932
8	3,342	5,67	41	29,192	35,096	74	57,790	65,895
9	4,	6,5	42	30,030	36,015	75	58,687	66,843
10	4,674	7,337	43	30,880	36,940	76	59,568	67,784
11	5,369	8,184	44	31,742	37,871	77	60,451	68,725
12	6,071	9,036	45	32,581	38,790	78	61,340	69,670
13	6,786	9,893	46	33,432	39,716	79	62,209	70,605
14	7,513	10,756	47	34,293	40,646	80	63,107	71,553
15	8,254	11,622	48	35,151	41,570	81	64,	72,5
16	9,	12,5	49	36,	42,5	82	64,883	73,441
17	9,753	13,376	50	36,857	43,428	83	65,780	74,390
18	10,463	14,231	51	37,712	44,356	84	66,651	75,325
19	11,283	15,141	52	38,564	45,282	85	67,568	76,284
20	12,055	16,027	53	39,438	46,219	86	68,459	77,229
21	12,674	16,837	54	40,284	47,142	87	69,339	78,169
22	13,616	17,808	55	41,165	48,082	88	70,224	79,112
23	14,402	18,701	56	42,016	49,008	89	71,132	80,066
24	15,194	19,597	57	42,968	49,984	90	72,012	81,006
25	16,	20,5	58	43,771	50,886	91	72,915	81,957
26	16,802	21,401	59	44,636	51,818	92	73,788	82,894
27	17,606	22,303	60	45,509	52,754	93	74,719	83,859
28	18,421	23,210	61	46,376	53,688	94	75,603	84,801
29	19,228	24,114	62	47,259	54,629	95	76,51	85,755
30	20,044	25,022	63	48,136	55,568	96	77,370	86,685
31	20,857	25,924	64	49,	56,5	97	78,305	87,652
32	21,678	26,839	65	49,872	57,436	98	79,192	88,596
33	22,506	27,753	66	50,751	58,376	99	80,120	89,56
						100	81,	90,5

The knowledge of the velocity at the bottom is of the greatest use for enabling us to judge of the action of the stream on its bed; and we shall now make some observations on this particular.

81
Operation
of the
stream on
its bed,

Every kind of soil has a certain velocity consistent with the stability of the channel. A greater velocity would enable the waters to tear it up, and a smaller velocity would permit the deposition of more moveable materials from above. It is not enough, then, for the stability of a river, that the accelerating forces are so adjusted to the size and figure of its channel that the current may be in train: it must also be in equilibrio with the tenacity of the channel.

We learn from observation, that a velocity of three inches per second at the bottom will just begin to work upon fine clay fit for pottery, and however firm and compact it may be, it will tear it up. Yet no beds are more stable than clay when the velocities do not exceed this: for the water soon takes away the impalpable particles of the superficial clay, leaving the particles of sand sticking by their lower half in the rest of the clay, which they now protect, making a very permanent bottom, if the stream does not bring down gravel or coarse sand, which will rub off this very thin crust, and allow

another layer to be worn off; a velocity of six inches will lift fine sand; eight inches will lift sand as coarse as linseed; 12 inches will sweep along fine gravel; 24 inches will roll along rounded pebbles an inch diameter; and it requires three feet per second at the bottom to sweep along shivery angular stones of the size of an egg.

The manner in which unwearied nature carries on some of these operations is curious, and deserves to be noticed a little. All must recollect the narrow ridges or wrinkles which are left on the sand by a temporary fresh or stream. They are observed to lie across the stream, and each ridge consists of a steep face AD, BF (fig. H.) which looks down the stream, and a gentler slope DB, FC, which connects this with the next ridge. As the stream comes over the first steep AD, it is directed almost perpendicularly against the point E immediately below D, and thus it gets hold of a particle of coarse sand, which it could not have detached from the rest had it been moving parallel to the surface of it. It easily rolls it up the gentle slope EB; arrived there, the particle tumbles over the ridge, and lies close at the bottom of it at F, where it is protected by the little eddy, which is formed in the very angle; other particles

Theory.

ticles lying about E are treated in the same way, and tumbling over the ridge B, cover the first particle, and now protect it effectually from any further disturbance. The same operation is going on at the bottom of each ridge. The brow or steep of the ridge gradually advances down the stream, and the whole set change their places, as represented by the dotted line *adbf*; and after a certain time the particle which was deposited at F is found in an unprotected situation, as it was in E, and it now makes another step down the stream.

The Abbé Bossut found, that when the velocity of the stream was just sufficient for lifting the sand (and a small excess hindered this operation altogether) a ridge advanced about 20 feet in a day.

Since the current carries off the most moveable matters of the channel, it leaves the bottom covered with the remaining coarser sand, gravel, pebbles, and larger stones. To these are added many which come down the stream while it is more rapid, and also many which roll in from the sides as the banks wear away. All these form a bottom much more solid and immoveable than a bottom of the medium soil would have been. But this does not always maintain the channel in a permanent form; but frequently occasions great changes, by obliging the current, in the event of any sudden fresh or swell, to enlarge its bed, and even to change it altogether, by working to the right and to the left, since it cannot work downwards. It is generally from such accumulation of gravel and pebbles in the bottom of the bed that rivers change their channels.

It remains to ascertain, in absolute measures, the force which a current really exerts in attempting to drag along with it the materials of its channel; and which will produce this effect unless resisted by the inertia of these materials. It is therefore of practical importance to know this force.

Nor is it abstruse or difficult. For when a current is in train, the accelerating force is in equilibrio with the resistance, and is therefore its immediate measure. Now this accelerating force is precisely equal to the weight of the body of water in motion multiplied by the fraction which expresses the slope. The mean depth being equal to the quotient of the section divided by the border, the section is equal to the product of the mean depth multiplied by the border. Therefore, calling the border *b*, and the mean depth *d*, we have the section = *db*. The body of water in motion is therefore *db s* (because *s* was the slant length of a part whose difference of elevation is 1), and the accelerating

force is $db s \times \frac{1}{s}$, or *db*. But if we would only consider this resistance as corresponding to an unit of the length of the channel, we must divide the quantity *db* by *s*, and the resistance is then $\frac{db}{s}$. And if we would consider the resistance only for an unit of the border, we must divide this expression by *b*; and thus this resistance (taking an inch for the unit) will be expressed for one square inch of the bed by the weight of a bulk of water which has a square inch for its base, and $\frac{d}{s}$ for its height. And lastly, if E be taken for any given superficial extent of the channel or bed, and F the

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obstruction which we consider as a sort of friction, we

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shall have $F = \frac{Ed}{s}$.

Thus, let it be required to determine in pounds the resistance or friction on a square yard of a channel whose current is in train, which is 10 feet wide, four feet deep, and has a slope of one foot in a mile. Here E is nine feet. Ten feet width and four feet depth give a section of 40 feet. The border is 18 feet. Therefore $d = \frac{40}{18} = 2,1111$, and *s* is 5280. Therefore the friction is the weight of a column of water whose base is nine feet, and height $\frac{2,1111}{5280}$, or nearly $3\frac{6}{175}$ ounces avoirdupois.

§ 3. Settlement of the Beds of Rivers.

He who looks with a careless eye at a map of the world, is apt to consider the rivers which ramble over its surface as a chance-medley disposition of the drainers which carry off the waters. But it will afford a most agreeable object to a considerate and contemplative mind, to take it up in this very simple light; and having considered the many ways in which the drenched surface might have been cleared of the superfluous waters, to attend particularly to the very way which nature has followed. In following the troubled waters of a mountain torrent, or the pure streams which trickle from their bases, till he sees them swallowed up in the ocean, and in attending to the many varieties in their motions, he will be delighted with observing how the simple laws of mechanism are made so fruitful in good consequences, both by modifying the motions of the waters themselves, and also by inducing new forms on the surface of the earth, fitted for re-acting on the waters, and producing these very modifications of their motions which render them so beneficial. The permanent beds of rivers are by no means fortuitous gutters hastily scooped out by dashing torrents; but both they and the valleys through which they flow are the patient but unceasing labours of nature, prompted by goodness and directed by wisdom.

Whether we trace a river from the torrents which collect the superfluous waters of heaven, or from the springs which discharge what would otherwise be condemned to perpetual inactivity, each feeder is but a little rill which could not ramble far from its scanty source among growing plants and absorbent earth, without being sucked up and evaporated, did it not meet with other rills in its course. When united they form a body of water still inconsiderable, but much more able, by its bulk, to overcome the little obstacles to its motion; and the rivulet then moves with greater speed, as we have now learned. At the same time, the surface exposed to evaporation and absorption is diminished by the union of the rills. Four equal rills have only the surface of two when united. Thus the portion which escapes arrestment, and travels downward, is continually increasing. This is a happy adjustment to the other operations of nature. Were it otherwise, the lower and more valuable countries would be loaded with the passing waters in addition to their own surplus rains, and the immediate neighbourhood of the sea would be almost covered by the drains of the interior countries.

N n

Theory.

countries. But, fortunately, those passing waters occupy less room as they advance, and by this wise employment of the most simple means, not only are the superfluous waters drained off from our fertile fields, but the drains themselves become an useful part of the country by their magnitude. They become the habitation of a prodigious number of fishes, which share the Creator's bounty; and they become the means of mutual communication of all the blessings of cultivated society. The vague ramblings of the rivers scatter them over the face of the country, and bring them to every door. It is not even an indifferent circumstance, that they gather strength to cut out deep beds for themselves. By this means they cut open many springs. Without this, the produce of a heavy shower would make a swamp which would not dry up in many days. And it must be observed, that the same heat which is necessary for the vigorous growth of useful plants will produce a very copious evaporation. This must return in showers much too copious for immediate vegetation, and the overplus would be destructive. Is it not pleasant to contemplate this adjustment of the great operations of nature, so different from each other, that if chance alone directed the detail, it was almost an infinite odds that the earth would be uninhabitable?

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Their effect on the countries through which they pass.

But let us follow the waters in their operations, and note the face of the countries through which they flow: attending to the breadth, the depth, and the slope of the valleys, we shall be convinced that their present situation is extremely different from what it was in ancient days; and that the valleys themselves are the works of the rivers, or at least of waters which have descended from the heights, loaded with all the lighter matters which they were able to bring away with them. The rivers flow now in beds which have a considerable permanency; but this has been the work of ages. This has given stability, both by filling up and smoothing the valleys, and thus lessening the changing causes, and also by hardening the beds themselves, which are now covered with aquatic plants, and lined with the stones, gravel, and coarser sand, out of which all the lighter matters have been washed away.

The surface of the high grounds is undergoing a continual change; and the ground on which we now walk is by no means the same which was trodden by our remote ancestors. The showers from heaven carry down into the valleys, or sweep along by the torrents, a part of the soil which covers the heights and steep. The torrents carry this soil into the brooks, and these deliver part of it into the great rivers, and these discharge into the sea this fertilizing soil of the earth, where it is swallowed up, and forever lost for the purposes of vegetation. Thus the hillocks lose of their height, the valleys are filled up, and the mountains are laid bare, and show their naked precipices, which formerly were covered over with a flesh and skin, but now look like the skeleton of this globe. The low countries, raised and nourished for some time by the substance of the high lands, will go in their turn to be buried in the ocean; and then the earth, reduced to a dreary flat, will become an immense uninhabitable mass. This catastrophe is far distant, because this globe is in its youth, but it is not the less certain; and the united labours of the human race could not long protract the term.

But, in the mean time, we can trace a beneficent

purpose, and a nice adjustment of seemingly remote circumstances. The grounds near the sources of all our rivers are indeed gradually stripped of their most fertile ingredients. But had they retained them for ages, the sentient inhabitants of the earth, or at least the nobler animals, with man at their head, would not have derived much advantage from it. The general laws of nature produce changes in our atmosphere which must ever render these great elevations unfruitful. That genial warmth, which is equally necessary for the useful plant as for the animal which lives on it, is confined to the lower grounds. The earth, which on the top of mount Hæmus could only bring forth moss and dittany, when brought into the gardens of Spalatro, produced pot-herbs so luxuriant, that Dioclesian told his colleague Maximian that he had more pleasure in their cultivation than the Roman empire could confer. Thus nature not only provides us manure, but conveys it to our fields. She even keeps it safe in store for us till it shall be wanted. The tracts of country which are but newly inhabited by man, such as great part of America, and the newly discovered regions of Terra Australis, are still almost occupied by marshes and lakes, or covered with impenetrable forests; and they would remain long enough in this state, if population, continually increasing, did not increase industry, and multiply the hands of cultivators along with their necessities. The Author of Nature was alone able to form the huge ridges of the mountains, to model the hillocks and the valleys, to mark out the courses of the great rivers, and give the first trace to every rivulet; but has left to man the task of draining his own habitation and the fields which are to support him, because this is a task not beyond his powers. It was therefore of immense advantage to him that those parts of the globe into which he has not yet penetrated should remain covered with lakes, marshes, and forests, which keep in store the juice of the earth, which the influence of the air and the vivifying warmth of the sun would have expended long ere now in useless vegetation, and which the rains of heaven would have swept into the sea, had they not been thus protected by their situation or their cover. It is therefore the business of man to open up these mines of hoarded wealth, and to thank the Author of all good, who has thus husbanded them for his use, and left them as a rightful heritage for those of after days.

The earth had not in the remote ages, as in our day, those great canals, those capacious voiders, always ready to drain off the rain waters (of which only part is absorbed by the thirsty ground), and the pure waters of the springs from the foot of the hills. The rivers did not then exist, or were only torrents, whose waters, confined by the gullies and glens, are searching for a place to escape. Hence arise those numerous lakes in the interior of great continents, of which there are still remarkable reliicks in North America, which in process of time will disappear, and become champaign countries. The most remote from the sea, unable to contain its waters, finds an issue through some gorge of the hills, and pours over its superfluous waters into a lower basin, which, in its turn, discharges its contents into another, and the last of the chain delivers its waters by a river into the ocean. The communication was originally begun by a simple overflowing at the lowest part of the margin. This made a torrent, which quickly

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Beneficence displayed in the changes they produce.

Theory.

quickly deepened its bed; and this circumstance increasing its velocity, as we have seen, would extend this deepening backward to the lake, and draw off more of its waters. The work would go on rapidly at first, while earth and small stones only resisted the labours of nature; but these being washed away, and the channel hollowed out to the firm rock on all sides, the operation must go on very slowly, till the immense cascade shall undermine what it cannot break off, and then a new discharge will commence, and a quantity of flat ground will emerge all round the lake. The torrent, in the mean time, makes its way down the country, and digs a canal, which may be called the first sketch of a river, which will deepen and widen its bed continually. The waters of several basins united, and running together in a great body, will (according to the principles we have established) have a much greater velocity, with the same slope, than those of the lakes in the interior parts of the continent; and the sum of them all united in the basin next the sea, after having broken through its natural mound, will make a prodigious torrent, which will dig for itself a bed so much the deeper as it has more slope and a greater body of waters.

The formation of the first valleys, by cutting open many springs which were formerly concealed under ground, will add to the mass of running waters, and contribute to drain off the waters of these basins. In course of time many of them will disappear, and flat valleys among the mountains and hills are the traces of their former existence.

When nature thus traces out the courses of future rivers, it is to be expected that those streams will most deepen their channels which in their approach to the sea receive into their bed the greatest quantities of rain and spring waters, and that towards the middle of the continent they will deepen their channels less. In these last situations the natural slope of the fields causes the rain-water, rills, and the little rivulets from the springs, to seek their way to the rivers. The ground can sink only by the flattening of the hills and high grounds; and this must proceed with extreme slowness, because it is only the gentle, though incessant, work of the rains and springs. But the rivers, increasing in bulk and strength, and of necessity flowing over every thing, form to themselves capacious beds in a more yielding soil, and dig them even to the level of the ocean.

86
Beds of
rivers not
formed in
one in-
clined
plane.

The beds of rivers by no means form themselves in one inclined plane. If we should suppose a canal AB (fig. 12.) perfectly straight and horizontal at B, where it joins with the sea, this canal would really be an inclined channel of greater and greater slope as it is farther from B. This is evident; because gravity is directed towards the centre of the earth, and the angle CAB contained between the channel and the plumb-line at A is smaller than the similar angle CDB; and consequently the inclination to the horizon is greater in A than in D. Such a canal therefore would make the bed of a river; and some have thought that this was the real form of nature's work; but the supposition is a whim, and it is false. No river has a slope at all approaching to this. It would be 8 inches declivity in the mile next the ocean, 24 inches in the second mile, 40 inches in the third, and so on in the duplicate ratio (for the whole elevation) of the distances from the sea. Such a river would quickly tear up its bed in the moun-

tains (were there any grounds high enough to receive it), and, except its first cascade, would soon acquire a more gentle slope. But the fact is, and it is the result of the imprescriptible laws of nature, that the continued track of a river is a succession of inclined channels, whose slope diminishes by steps as the river approaches to the sea. It is not enough to say that this results from the natural slope of the countries through which it flows, which we observe to increase in declivity as we go to the interior parts of the continent. Were it otherwise, the equilibrium to which nature aims in all her operations would still produce the gradual diminution of the slope of rivers. Without it they could not be in a permanent train.

Theory.

That we may more easily form a notion of the manner in which the permanent course of a river is established, let us suppose a stream or rivulet *sa* (fig. 13.) far up the country, make its way through a soil perfectly uniform to the sea, taking the course *s a b c d e f*, and receiving the permanent additions of the streams *g a*, *h b*, *i c*, *k d*, *l e*, and that its velocity and slope in all its parts are so suited to the tenacity of the soil and magnitude of its section, that neither do its waters during the annual freshes tear up its banks or deepen its bed, nor do they bring down from the high lands materials which they deposit in the channel in times of smaller velocity. Such a river may be said to be in a permanent state, to be in *conservation*, or to have *stability*. Let us call this state of a river its *REGIMEN*, denoting by the word the proper adjustment of the velocity of the stream to the tenacity of the channel. The velocity of its regimen must be the same throughout, because it is this which regulates its action on the bottom, which is the same from its head to the sea. That its bed may have stability, the mean velocity of the current must be constant, notwithstanding the inequality of discharge through its different sections by the brooks which it receives in its course, and notwithstanding the augmentation of its section as it approaches the sea.

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How the
permanent
course of a
river is
established.

On the other hand, it behoved this exact regimen to commence at the mouth of the river, by the working of the whole body of the river, in concert with the waters of the ocean, which always keep within the same limits, and make the ultimate level invariable. This working will begin to dig the bed, giving it as little breadth as possible: for this working consists chiefly in the efforts of falls and rapid streams, which arise of themselves in every channel which has too much slope. The bottom deepens, and the sides remain very steep, till they are undermined and crumble down; and being then diluted in the water, they are carried down the stream, and deposited where the ocean checks its speed. The banks crumble down anew, the valley or hollow forms; but the section, always confined to its bottom, cannot acquire a great breadth, and it retains a good deal of the form of the trapezium formerly mentioned. In this manner does the regimen begin to be established from *f* to *e*.

With respect to the next part *d e*, the discharge or produce is diminished by the want of the brook *l e*. It must take a similar form, but its area will be diminished, in order that its velocity may be the same; and its mean depth *d* being less than in the portion *e f* below, the slope must be greater. Without these conditions we could not have the uniform velocity, which the assumed

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permanency

Theory.

permanency in an uniform soil necessarily supposes. Reasoning after the same manner for all the portions *cd, bc, ab, sa*, we see that the regimen will be successively established in them, and that the slope necessary for this purpose will be greater as we approach the river head. The vertical section or profile of the course of the river *sabcdef* will therefore resemble the line *SABCDEF* which is sketched below, having its different parts variously inclined to the horizontal line *HF*.

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This process of nature

Such is the process of nature to be observed in every river on the surface of the globe. It long appeared a kind of puzzle to the theorists; and it was this observation of the increasing, or at least this continued velocity with smaller slope, as the rivers increased by the addition of their tributary streams, which caused Guglielmini to have recourse to his new principle, the energy of deep waters. We have now seen in what this energy consists. It is only a greater quantity of motion remaining in the middle of a great stream of water after a quantity has been retarded by the sides and bottom; and we see clearly, that since the addition of a new and perhaps an equal stream does not occupy a bed of double surface, the proportion of the retardations to the remaining motion must continually diminish as a river increases by the addition of new streams. If therefore the slope were not diminished, the regimen would be destroyed, and the river would dig up its channel. We have a full confirmation of this in the many works which have been executed on the Po, which runs with rapidity through a rich and yielding soil. About the year 1600, the waters of the Panaro, a very considerable river, were added to the Po Grande; and although it brings along with it in its freshes a vast quantity of sand and mud, it has greatly deepened the whole Tronco di Venezia from the confluence to the sea. This point was clearly ascertained by Manfredi about the 1720, when the inhabitants of the valleys adjacent were alarmed by the project of bringing in the waters of the Rheno, which then ran through the Ferrarese. Their fears were overcome, and the Po Grande continues to deepen its channel every day with a prodigious advantage to the navigations; and there are several extensive marshes which now drain off by it, after having been for ages under water: and it is to be particularly remarked, that the Rheno is the foulest river in its freshes of any in that country. We insert this remark, because it may be of great practical utility, as pointing out a method of preserving and even improving the depth of rivers or drains in flat countries, which is not obvious, and rather appears improper: but it is strictly conformable to a true theory, and to the operations of nature, which never fails to adjust every thing so as to bring about an equilibrium. Whatever the declivity of the country may have been originally, the regimen begins to be settled at the mouths of the rivers, and the slopes are diminished in succession as we recede from the coast. The original slopes inland may have been much greater; but they will (when busy nature has completed her work) be left somewhat, and only so much greater, that the velocity may be the same notwithstanding the diminution of the section and mean depth.

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Effect of freshes.

Freshes will disturb this methodical progress relative only to the successive permanent additions; but their effects chiefly accelerate the deepening of the bed, and

the diminution of the slope, by augmenting the velocity during their continuance. But when the regimen of the permanent additions is once established, the freshes tend chiefly to widen the bed, without greatly deepening it: for the aquatic plants, which have been growing and thriving during the peaceable state of the river, are now laid along, but not swept away, by the freshes and protect the bottom from their attacks; and the stones and gravel, which must have been left bare in a course of years, working on the soil, will also collect in the bottom, and greatly augment its power of resistance; and even if the floods should have deepened the bottom some small matter, some mud will be deposited as the velocity of the freshes diminishes, and this will remain till the next flood.

We have supposed the soil uniform through the whole course: This seldom happens; therefore the circumstances which insure permanency, or the regimen of a river, may be very different in its different parts and in different rivers. We may say in general, that the farther that the regimen has advanced up the stream in any river, the more slowly will it convey its waters to the sea.

There are some general circumstances in the motion of rivers which it will be proper to take notice of just now, that they may not interrupt our more minute examination of their mechanism, and their explanations will then occur of themselves as corollaries of the propositions which we shall endeavour to demonstrate.

In a valley of small width the river always occupies the lowest part of it; and it is observed, that this is seldom in the middle of the valley, and is nearest to that side on which the slope from the higher grounds is steepest, and this without regard to the line of its course. The river generally adheres to the steepest hills, whether they advance into the plain or retire from it. This general feature may be observed over the whole globe. It is divided into copartments by great ranges of mountains; and it may be observed, that the great rivers hold their course not very far from them, and that their chief feeders come from the other side. In every copartment there is a swell of the low country at a distance from the bounding ridge of mountains; and on the summit of this swell the principal feeders of the great river have their sources.

The name *valley* is given with less propriety to these immense regions, and is more applicable to tracks of champaign land which the eye can take in at one view. Even here we may observe a resemblance. It is not always in the very lowest part of this valley that the river has its bed; although the waters of the river flow in a channel below its immediate banks, these banks are frequently higher than the grounds at the foot of the hills. This is very distinctly seen in Lower Egypt, by means of the canals which are carried backward from the Nile for accelerating its fertilizing inundations. When the canals are opened to admit the waters, it is always observed that the districts most remote are the first covered, and it is several days before the immediately adjoining fields partake of the blessing. This is a consequence of that general operation of nature by which the valleys are formed. The river in its floods is loaded with mud, which it retains as long as it rolls rapidly along its limited bed, tumbling its waters over and over, and taking up in every spot as much as it

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In narrow valleys rivers adhere to the steepest hills.

Theory. it deposits: but as soon as it overflows its banks, the very enlargement of its section diminishes the velocity of the water; and it may be observed still running in the track of its bed with great velocity, while the waters on each side are stagnant at a very small distance: Therefore the water, on getting over the banks, must deposit the heaviest, the firmest, and even the greatest part of its burden, and must become gradually clearer to it approaches the hills. Thus a gentle slope is given as the valley in a direction which is the reverse of what one would expect. It is, however, almost always the case in wide valleys, especially if the great river comes through a soft country. The banks of the brooks and ditches are observed to be deeper as they approach the river, and the merely superficial drains run backwards from it.

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The bed
of rivers
is enlarged
near the
sea,

We have already observed, that the enlargement of the bed of a river, in its approach to the sea, is not in proportion to the increase of its waters. This would be the case even if the velocity continued the same: and therefore, since the velocity even increases, in consequence of the greater energy of a large body of water, which we now understand distinctly, a still smaller bed is sufficient for conveying all the water to the sea.

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The water
being
checked by
the tides
of the
ocean.

This general law is broken, however, in the immediate neighbourhood of the sea; because in this situation the velocity of the water is checked by the passing flood-tides of the ocean. As the whole waters must still be discharged, they require a larger bed, and the enlargement will be chiefly in width. The sand and mud are deposited when the motion is retarded. The depth of the mouth of the channel is therefore diminished. It must therefore become wider. If this be done on a coast exposed to the force of a regular tide, which carries the waters of the ocean across the mouth of the river, this regular enlargement of the mouth will be the only consequence, and it will generally widen till it washes the foot of the adjoining hills; but if there be no tide in the sea, or a tide which does not set across the mouth of the river, the sands must be deposited at the sides of the opening, and become additions to the shore, lengthening the mouth of the channel. In this sheltered situation, every trivial circumstance will cause the river to work more on particular parts of the bottom, and deepen the channel there. This keeps the mud suspended in such parts of the channel, and it is not deposited till the stream has shot farther out into the sea. It is deposited on the sides of those deeper parts of the channel, and increases the velocity in them, and thus still farther protracts the deposition. Rivers so situated will not only lengthen their channels, but will divide them, and produce islands at their mouths. A bush, a tree torn up by the roots by a mountain torrent, and floated down the stream, will thus inevitably produce an island; and rivers in which this is common will be continually shifting their mouths. The Mississippi is a most remarkable instance of this. It has a long course through a rich soil, and disembogues itself into the bay of Mexico, in a place where there is no *passing tide*, as may be seen by comparing the hours of high water in different places. No river that we know carries down its stream such numbers of rooted-up trees: they frequently interrupt the navigation, and render it always dangerous in the night.

Theory. This river is so beset with flats and shifting sands at its mouth, that the most experienced pilots are puzzled; and it has protruded its channel above 50 miles in the short period that we have known it. The discharge of the Danube is very similar: so is that of the Nile; for it is discharged into a still corner of the Mediterranean. It may now be said to have acquired considerable permanency; but much of this is owing to human industry, which strips it as much as possible of its subsideable matter. The Ganges too is in a situation pretty similar, and exhibits similar phenomena. The Maragnon might be noticed as an exception; but it is not an exception. It has flowed very far in a level bed, and its waters come pretty clear to Para; but besides, there is a strong transverse tide, or rather current, at its mouth, setting to the south-east both during flood and ebb. The mouth of the Po is perhaps the most remarkable of any on the surface of this globe, and exhibits appearances extremely singular. Its discharge is into a sequestered corner of the Adriatic. Though there be a more remarkable tide in this gulf than in any part of the Mediterranean, it is still but trifling, and it either sets directly in upon the mouth of the river, or retires straight away from it. The river has many mouths, and they shift prodigiously. There has been a general increase of the land very remarkable. The marshes where Venice now stands were, in the Augustan age, everywhere penetrable by the fishing boats, and in the 5th century could only bear a few miserable huts; now they are covered with crowds of stately buildings. Ravenna, situated on the southernmost mouth of the Po, was, in the Augustan age, at the extremity of a swamp, and the road to it was along the top of an artificial mound, made by Augustus at immense expence. It was, however, a fine city, containing extensive docks, arsenals, and other massy buildings, being the great military port of the empire, where Augustus laid up his great ships of war. In the Gothic times it became almost the capital of the Western empire, and was the seat of government and of luxury. It must, therefore, be supposed to have every accommodation of opulence, and we cannot doubt of its having paved streets, wharfs, &c.; so that its wealthy inhabitants were at least walking dryfooted from house to house. But now it is an Italian mile from the sea, and surrounded with vineyards and cultivated fields, and is accessible in every direction. All this must have been formed by depositions from the Po, flowing through Lombardy loaded with the spoils of the Alps, which were here arrested by the reeds and bulrushes of the marsh. These things are in common course; but when wells are dug, we come to the pavements of the ancient city, and these pavements are all on one exact level, and they are *eight feet below the surface of the sea at low water*. This cannot be ascribed to the subsiding of the ancient city. This would be irregular, and greatest among the heavy buildings. The tomb of Theodoric remains, and the pavement round it is on a level with all the others. The lower story is always full of water; so is the lower story of the cathedral to the depth of three feet. The ornaments of both these buildings leave no room to doubt that they were formerly dry; and such a building as the cathedral could not sink without crumbling into pieces.

It is by no means easy to account for all this. The depositions

Theory.

depositions of the Po and other rivers must raise the ground; and yet the rivers must still flow over all. We must conclude that the surface of the Adriatic is by no means level, and that it slopes like a river from the Lagoon of Venice to the eastward. In all probability it even slopes considerably outwards from the shore. This will not hinder the alternations of ebb and flow tide, as will be shown in its proper place. The whole shores of this gulph exhibit most uncommon appearances.

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Rivers
are convex
athwart
the stream,
and the
cause of it.

The last general observations which we shall make in this place is, that the surface of a river is not flat, considered athwart the stream, but convex: this is owing to its motion. Suppose a canal of stagnant water; its surface would be a perfect level. But suppose it possible by any means to give the middle waters a motion in the direction of its length, they must drag along with them the waters immediately contiguous. These will move less swiftly, and will in like manner drag the waters without them; and thus the water at the sides being abstracted, the depth must be less, and the general surface must be convex across. The fact in a running stream is similar to this; the side waters are withheld by the sides, and every filament is moving more slowly than the one next it towards the middle of the river, but faster than the adjoining filament on the land side. This alone must produce a convexity of surface. But besides this, it is demonstrable that the pressure of a running stream is diminished by its motion, and the diminution is proportional to the height which would produce the velocity with which it is gliding past the adjoining filament. This convexity must in all cases be very small. Few rivers have the velocity nearly equal to eight feet *per* second, and this requires a height of one foot only. An author quoted by Mr Buffon says, that he has observed on the river Aveiron an elevation of three feet in the middle during floods; but we suspect some error in the observation.

§ 4. Of the Windings of Rivers.

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Winding
course of
rivers, how
formed.

RIVERS are seldom straight in their course. Formed by the hand of nature, they are accommodated to every change of circumstance. They wind around what they cannot get over, and work their way to either side according as the resistance of the opposite bank makes a straight course more difficult; and this seemingly fortuitous rambling distributes them more uniformly over the surface of a country, and makes them every where more at hand, to receive the numberless rills and rivulets which collect the waters of our springs and the superfluities of our showers, and to comfort our habitations with the many advantages which cultivation and society can derive from their presence. In their feeble beginnings the smallest inequality of slope or consistency is enough to turn them aside and make them ramble through every field, giving drink to our herds and fertility to our soil. The more we follow nature into the minutiae of her operations, the more must we admire the inexhaustible fertility of her resources, and the simplicity of the means by which she produces the most important and beneficial effects. By thus twisting the course of our rivers into 10,000 shapes, she keeps them long amidst our fields, and thus compensates for the declivity of the surface, which otherwise would tumble them with great rapidity into the ocean, loaded with the best and richest of our soil. Without this, the

showers of heaven would have little influence in supplying the waste of incessant evaporation. But as things are, the rains are kept slowly trickling along the sloping sides of our hills and steeps, winding round every clod, nay every plant, which lengthens their course, diminishes their slope, checks their speed, and thus prevents them from quickly brushing off from every part of the surface the lightest and best of the soil. The flattest of our holm lands would be too steep, and the rivers would shoot along through our finest meadows, hurrying every thing away with them, and would be unfit for the purposes of inland conveyance, if the inequalities of soil did not make them change this headlong course for the more beautiful meanders which we observe in the course of the small rivers winding through our meadows. Those rivers are in general the straightest in their course which are the most rapid, and which roll along the greatest bodies of water; such are the Rhone, the Po, the Danube. The smaller rivers continue more devious in their progress, till they approach the sea, and have gathered strength from all their tributary streams.

Every thing aims at an equilibrium, and this directs even the ramblings of rivers. It is of importance to understand the relation between the force of a river and the resistance which the soil opposes to those deviations from a rectilinear course; for it may frequently happen that the general procedure of nature may be inconsistent with our local purposes. Man was set down on this globe, and the task of cultivating it was given him by nature, and his chief enjoyment seems to be to struggle with the elements. He must not find things to his mind, but he must mould them to his own fancy. Yet even this seeming anomaly is one of nature's most beneficent laws; and his exertions must still be made in conformity with the general train of the operations of mechanical nature: and when we have any work to undertake relative to the course of rivers, we must be careful not to thwart their general rules, otherwise we shall be sooner or later punished for their infraction. Things will be brought back to their former state, if our operations are inconsistent with that equilibrium which is constantly aimed at, or some new state of things which is equivalent will be soon induced. If a well regulated river has been improperly deepened in some place, to answer some particular purpose of our own, or if its breadth has been improperly augmented, we shall soon see a deposition of mud or sand choak up our fancied improvements; because, as we have enlarged the section without increasing the slope or the supply, the velocity must diminish, and floating matters must be deposited.

It is true, we frequently see permanent channels where the forms are extremely different from that which the waters would dig for themselves in an uniform soil, and which approaches a good deal to the trapezium described formerly. We see a greater breadth frequently compensate for a want of depth; but all such deviations are a sort of constraint, or rather are indications of inequality of soil. Such irregular forms are the works of nature; and if they are permanent, the equilibrium is obtained. Commonly the bottom is harder than the sides, consisting of the coarsest of the sand and of gravel; and therefore the necessary section can be obtained only by increasing the width. We are

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What na-
ture has left
for man to
perform.

Theory. are accustomed to attend chiefly to the appearances which prognosticate mischief, and we interpret the appearances of a permanent bed in the same way, and frequently form very false judgments. When we see one bank low and flat, and the other high and abrupt, we suppose that the waters are passing along the first in peace, and with a gentle stream, but that they are rapid on the other side, and are tearing away the bank; but it is just the contrary. The bed being permanent, things are in equilibrio, and each bank is of a form just competent to that equilibrium. If the soil on both sides be uniform, the stream is most rapid on that side where the bank is low and flat, for in no other form would it withstand the action of the stream; and it has been worn away till its flatness compensates for the greater force of the stream. The stream on the other side must be more gentle, otherwise the bank could not remain abrupt. In short, in a state of permanency, the velocity of the stream and form of the bank are just suited to each other. It is quite otherwise before the river has acquired its proper regimen.

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Necessity
of attending
to nature in re-
gulating
the course
of rivers.

A careful consideration therefore of the general features of rivers which have settled their regimen, is of use for informing us concerning their internal motions, and directing us to the most effectual methods of regulating their course.

We have already said that perpendicular brims are inconsistent with stability. A semicircular section is the form which would produce the quickest train of a river whose expence and slope are given; but the banks at B and D (fig. 14.) would crumble in, and lie at the bottom, where their horizontal surface would secure them from farther change. The bed will acquire the form G c F, of equal section, but greater width, and with brims less shelving. The proportion of the velocities at A and c may be the same with that of the velocities at A and C; but the velocity at G and F will be less than it was formerly at B, C, or D; and the velocity in any intermediate point E, being somewhat between those at F and c, must be less than it was in any intermediate point of the semicircular bed. The velocities will therefore decrease along the border from c towards G and F, and the steepness of the border will augment at the same time, till, in every point of the new border G c F, these two circumstances will be so adjusted that the necessary equilibrium is established.

The same thing must happen in our trapezium. The slope of the brims may be exact, and will be retained; it will, however, be too great anywhere below, where the velocity is greater, and the sides will be worn away till the banks are undermined and crumble down, and the river will maintain its section by increasing its width. In short, no border made up of straight lines is consistent with that gradation of velocity which will take place whenever we depart from a semicircular form. And we accordingly see, that in all natural channels the section has a curvilinear border, with the slope increasing gradually from the bottom to the brim.

These observations will enable us to understand how nature operates when the inequality of surface or of tenacity obliges the current to change its direction, and the river forms an elbow.

Supposing always that the discharge continues the same, and that the mean velocity is either preserved or

restored, the following conditions are necessary for a permanent regimen.

1. The depth of water must be greater in the elbow than anywhere else.

2. The main stream, after having struck the concave bank, must be reflected in an equal angle, and must then be in the direction of the next reach of the river.

3. The angle of incidence must be proportioned to the tenacity of the soil.

4. There must be in the elbow an increase of slope, or of head of water, capable of overcoming the resistance occasioned by the elbow.

The reasonableness, at least, of these conditions will appear from the following considerations.

1. It is certain that force is expended in producing this change of direction in a channel which by supposition diminishes the current. The diminution arising from any cause which can be compared with friction must be greater when the stream is directed against one of the banks. It may be very difficult to state the proportion, and it would occupy too much of our time to attempt it; but it is sufficient that we be convinced that the retardation is greater in this case. We see no cause to increase the mean velocity in the elbow, and we must therefore conclude that it is diminished. But we are supposing that the discharge continues the same; the section must therefore augment, or the channel increase its transverse dimensions. The only question is, In what manner it does this, and what change of form does it affect, and what form is competent to the final equilibrium and the consequent permanency of the bed? Here there is much room for conjecture. Mr Buat reasons as follows. If we suppose that the points B and C (fig. 15.) continue on a level, and that the points H and I at the beginning of the next reach are also on a level, it is an inevitable consequence that the slope along CMI must be greater than along BEH, because the depression of H below B is equal to that of I below C, and BEH is longer than CMI. Therefore the velocity along the convex bank CMI must be greater than along BEH. There may even be a stagnation and an eddy in the contrary direction along the concave bank. Therefore, if the form of the section were the same as up the stream, the sides could not stand on the convex bank. When therefore the section has attained a permanent form, and the banks are again in equilibrio with the action of the current, the convex bank must be much flatter than the concave. If the water is really still on the concave bank, that bank will be absolutely perpendicular; nay, may overhang.—Accordingly, this state of things is matter of daily observation, and justifies our reasoning, and entitles us to say, that this is the nature of the internal motion of the filaments which we cannot distinctly observe. The water moves most rapidly along the convex bank, and the thread of the stream is nearest to this side. Reasoning in this way, the section, which we may suppose to have been originally of the form M b a E (fig. 16.) assumes the shape MBAE.

2. Without presuming to know the mechanism of the internal motions of fluids, we know that superficial waves are reflected precisely as if they were elastic bodies, making the angles of incidence and reflection equal. In as far therefore as the superficial wave is concerned in the operation, Mr Buat's second position is just.

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ditions.

Theory.

The permanency of the next reach requires that its axis shall be in the direction of the line EP which makes the angle $GEP = FEN$. If the next reach has the direction EQ, MR, the wave reflected in the line ES will work on the bank at S, and will be reflected in the line ST, and work again on the opposite bank at T. We know that the effect of the superficial motion is great, and that it is the principal agent in destroying the banks of canals. So far therefore Mr Buat is right. We cannot say with any precision or confidence how the actions of the under filaments are modified; but we know no reason for not extending to the under filaments what appears so probable with respect to the surface water.

3. The third position is no less evident. We do not know the mode of action of the water on the bank; but our general notions on this subject, confirmed by common experience, tell us that the more obliquely a stream of water beats on any bank, the less it tends to undermine it or wash it away. A stiff and cohesive soil therefore will suffer no more from being almost perpendicularly buffeted by a stream than a friable sand would suffer from water gliding along its face. Mr Buat thinks, from experience, that a clay bank is not sensibly affected till the angle FEB is about 36 degrees.

4. Since there are causes of retardation, and we still suppose that the discharge is kept up, and that the mean velocity, which had been diminished by the enlargement of the section, is again restored, we must grant that there is provided, in the mechanism of these motions, an accelerating force adequate to this effect. There can be no accelerating force in an open stream but the superficial slope. In the present case it is undoubtedly so; because by the deepening of the bottom where there is an elbow in the stream, we have of necessity a counter slope. Now, all this head of water, which must produce the augmentation of velocity in that part of the stream which ranges round the convex bank, will arise from the check which the water gets from the concave bank. This occasions a gorge or swell up the stream, enlarges a little the section at BVC; and this, by the principle of uniform motion, will augment all the velocities, deepen the channel, and put every thing again into its train as soon as the water gets into the next reach. The water at the bottom of this basin has very little motion, but it defends the bottom by this very circumstance.

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Remarks
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and the rea-
sons of
them.

Such are the notions which Mr de Buat entertains of this part of the mechanism of running waters. We cannot say that they are very satisfactory, and they are very opposite to the opinions commonly entertained on the subject. Most persons think that the motion is most rapid and turbulent on the side of the concave bank, and that it is owing to this that the bank is worn away till it become perpendicular, and that the opposite bank is flat, because it has not been gnawed away in this manner. With respect to this general view of the matter, these persons may be in the right; and when a stream is turned into a crooked and yielding channel for the first time, this is its manner of action. But Mr Buat's aim is to investigate the circumstances which obtain in the case of a regimen; and in this view he is undoubtedly right as to the facts, though his mode of accounting for these facts may be erroneous. And as

Theory.

this is the only useful view to be taken of the subject, it ought chiefly to be attended to in all our attempts to procure stability to the bed of a river, without the expensive helps of masonry, &c. If we attempt to secure permanency by deepening on the inside of the elbow, our bank will undoubtedly crumble down, diminish the passage, and occasion a more violent action on the hollow bank. The most effectual mean of security is to enlarge the section: and if we do this on the inside bank, we must do it by widening the stream very much, that we may give a very sloping bank. Our attention is commonly drawn to it when the hollow bank is giving way, and with a view to stop the ravages of the stream. Things are not now in a state of permanency, but nature is working in her own way to bring it about. This may not suit *our* purpose, and we must thwart her. The phenomena which we then observe are frequently very unlike to those described in the preceding paragraphs. We see a violent tumbling motion in the stream towards the hollow bank. We see an evident accumulation of water on that side, and the point B is frequently higher than C. This regorging of the water extends to some distance, and is of itself a cause of greater velocity, and contributes, like a head of stagnant water, to force the stream through the bend, and to deepen the bottom. This is clearly the case when the velocity is excessive, and the hollow bank able to abide the shock. In this situation the water thus heaped up escapes where it best can; and as the water, obstructed by an obstacle put in its way, escapes by the sides, and there has its velocity increased, so here the water gorged up against the hollow bank swells over towards the opposite side, and passes round the convex bank with an increased velocity. It depends much on the adjustment between the velocity and consequent accumulation, and the breadth of the stream and the angle of the elbow, whether this augmentation of velocity shall reach the convex bank; and we sometimes see the motion very languid in that place, and even depositions of mud and sand are made there. The whole phenomena are too complicated to be accurately described in general terms, even in the case of perfect regimen: for this regimen is relative to the consistence of the channel; and when this is very great, the motions may be most violent in every quarter. But the preceding observations are of importance, because they relate to ordinary cases and to ordinary channels.

It is evident, from Mr Buat's second position, that the proper form of an elbow depends on the breadth of the stream as well as on the radius of curvature, and that every angle of elbow will require a certain proportion between the width of the river and the radius of the sweep. Mr Buat gives rules and formulæ for all these purposes, and shows that in one sweep there may be more than one reflection or rebound. It is needless to enlarge on this matter of mere geometrical discussion. It is with the view of enabling the engineer to trace the windings of a river in such a manner that there shall be no rebounds which shall direct the stream against the sides, but preserve it always in the axis of every reach. This is of consequence, even when the bends of the river are to be secured by masonry or piling; for we have seen the necessity of increasing the section, and the tendency which the waters have to deepen the channel on that side where the rebound is made. This tends to

Theory. to undermine our defences, and obliges us to give them deeper and more solid foundations in such places. But any person accustomed to the use of the scale and compasses will form to himself rules of practice equally sure and more expeditious than Mr de Buat's formulæ.

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Resistance
caused by
an elbow,
and mode
of over-
coming it.

We proceed, therefore, to what is more to our purpose, the consideration of the resistance caused by an elbow, and the methods of providing a force capable of overcoming it. We have already taken notice of the salutary consequences arising from the rambling course of rivers, inasmuch as it more effectually spreads them over the face of a country. It is no less beneficial by diminishing their velocity. This it does both by lengthening their course, which diminishes the declivity, and by the very resistance which they meet with at every bend. We derive the chief advantages from our rivers, when they no longer shoot their way from precipice to precipice, loaded with mud and sand, but peaceably roll along their clear waters, purified during their gentler course, and offer themselves for all the purposes of pasturage, agriculture, and navigation. The more a river winds its way round the foot of the hills, the more is the resistance of its bed multiplied; the more obstacles it meets with in its way from its source to the sea, the more moderate is its velocity; and instead of tearing up the very bowels of the earth, and digging for itself a deep trough, along which it sweeps rocks and rooted-up trees, it flows with majestic pace even with the surface of our cultivated grounds, which it embellishes and fertilizes.

We may with safety proceed on the supposition, that the force necessary for overcoming the resistance arising from a rebound is as the square of the velocity; and it is reasonable to suppose it proportional to the square of the sine of the angle of incidence, and this for the reasons given for adopting this measure of the general *RESISTANCE of Fluids*. It cannot, however, claim a greater confidence here than in that application; and it has been shown in that article with what uncertainty and limitations it must be received. We leave it to our readers to adopt either this or the simple ratio of the sines, and shall abide by the duplicate ratio with Mr Buat, because it appears by his experiments that this law is very exactly observed in tubes in inclinations not exceeding 40° ; whereas it is in these small angles that the application to the general resistance of fluids is most in fault. But the correction is very simple, if this value shall be found erroneous. There can be little doubt that the force necessary for overcoming the resistance will increase as the number of rebounds.—Therefore we may express the

resistance, in general, by the formula $r = \frac{V^2 s^2 n}{m}$; where

r is the resistance, V the mean velocity of the stream, s the sine of the angle of incidence, n the number of equal rebounds (that is, having equal angles of incidence), and m is a number to be determined by experiment. Mr de Buat made many experiments on the resistance occasioned by the bendings of pipes, none of which differed from the result of the above formula above one part in twelve; and he concludes, that the

resistance to one bend may be estimated at $\frac{V^2 s^2}{3000}$.

The experiment was in this form: A pipe of 1 inch diameter, and 10 feet long, was formed with 10 re-

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bounds of 36° each. A head of water was applied to it, which gave the water a velocity of six feet *per second*. Another pipe of the same diameter and length, but without any bendings, was subjected to a pressure of a head of water, which was increased till the velocity of efflux was also six feet *per second*. The additional head of water was $5\frac{2}{5}$ inches. Another of the same diameter and length, having one bend of $24^\circ 34'$, and running 85 inches *per second*, was compared with a straight pipe having the same velocity, and the difference of the heads of water was $\frac{17}{100}$ of an inch. A computation from these two experiments will give the above result, or in English measure, $r = \frac{V^2 s^2}{3200}$

very nearly. It is probable that this measure of the resistance is too great; for the pipe was of uniform diameter even in the bends: whereas in a river properly formed, where the regimen is exact, the capacity of the section of the bend is increased.

The application of this theory to inclined tubes and to open streams is very obvious, and very legitimate and safe. Let AB (fig. 17.) be the whole height of the reservoir A B I K, and BC the horizontal length of a pipe, containing any number of rebounds, equal or unequal, but all regular, that is, constructed according to the conditions formerly mentioned. The whole head of water should be conceived as performing, or as divided into portions which perform, three different offices.—

One portion, $AD = \frac{V^2}{505}$, impels the water into the

entry of the pipe with the velocity with which it really moves in it; another portion EB is in equilibrio with the resistances arising from the mere length of the pipe expanded into a straight line; and the third portion DE serves to overcome the resistance of the bends. If, therefore, we draw the horizontal line BC, and, taking the pipe BC out of its place, put it in the position DH, with its mouth C in H, so that DH is equal to BC, the water will have the same velocity in it that it had before. *N. B.* For greater simplicity of argument, we may suppose that when the pipe was inserted at B, its bends lay all in a horizontal plane, and that when it is inserted at D, the plane in which all its bends lie slopes only in the direction DH, and is perpendicular to the plane of the figure. We repeat it, the water will have the same velocity in the pipes BC and DH, and the resistances will be overcome. If we now prolong the pipe DH towards L to any distance, repeating continually the same bendings in a series of lengths, each equal to DH, the motion will be continued with the velocity corresponding to the pressure of the column AD; because the declivity of the pipe is augmented in each length equal to DH, by a quantity precisely sufficient for overcoming all the resistances in that length; and the true slope in these cases is BE + ED, divided by the expanded length of the pipe BC or DH.

The analogy which we were enabled to establish between the uniform motion or the train of pipes and of open streams, intitles us now to say, that when a river has bendings, which are regularly repeated at equal intervals, its slope is compounded of the slope which is necessary for overcoming the resistance of a straight channel of its whole expanded length, agreeably to

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Theory ap-
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streams.

Theory. the formula for uniform motion, and of the slope which is necessary for overcoming the resistance arising from its bendings alone.

Thus, let there be a river which, in the expanded course of 6000 fathoms, has 10 elbows, each of which has 30° of rebound; and let its mean velocity be 20 inches in a second. If we would learn its whole slope in this 6000 fathoms, we must first find (by the formula of uniform motion) the slope s which will produce the velocity of 20 inches in a straight river of this length, section, and mean depth. Suppose this to be

$\frac{1}{1800}$, or 20 inches in this whole length. We must **Theory.** then find (by the formula $\frac{V^2 \sin^2}{3200}$) the slope necessary

for overcoming the resistance of 10 rebounds of 30° each. This we shall find to be $6\frac{1}{2}$ inches in the 6000 fathoms. Therefore the river must have a slope of $26\frac{1}{2}$ inches in 6000 fathoms, or $\frac{1}{1800}$; and this slope will produce the same velocity which 20 inches, or $\frac{1}{1800}$, would do in a straight running river of the same length.

PART II. PRACTICAL INFERENCES.

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Approximation by trial and correction recommended to practical engineers.

HAVING thus established a theory of a most important part of hydraulics, which may be considered in as a just representation of nature's procedure, we shall apply it to the examination of the chief results of every thing which art has contrived for limiting the operations of nature, or modifying them so as to suit our particular views. Trusting to the detail which we have given of the connecting principles, and the chief circumstances which co-operate in producing the ostensible effect; and supposing that such of our readers as are interested in this subject will not think it too much trouble to make the applications in the same detail; we shall content ourselves with merely pointing out the steps of the process, and showing their foundation in the theory itself: and frequently, in place of the direct analysis which the theory enables us to employ for the solution of the problems, we shall recommend a process of approximation by trial and correction, sufficiently accurate, and more within the reach of practical engineers. We are naturally led to consider in order the following articles.

1. The effects of permanent additions of every kind to the waters of a river, and the most effectual methods of preventing or removing inundations.
2. The effects of weirs, bars, sluices, and keeps of every kind, for raising the surface of a river; and the similar effects of bridges, piers, and every thing which contracts the section of the stream.
3. The nature of canals; how they differ from rivers in respect of origin, discharge, and regimen, and what conditions are necessary for their most perfect construction.
4. Canals for draining land, and drafts or canals of derivation from the main stream. The principles of their construction, so that they may suit their intended purposes, and the change which they produce on the main stream, both above and below the point of derivation.

Of the effects of permanent additions to the waters of a river.

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Problems and examples on the effects of permanent additions to the waters of a river.

FROM what has been said already, it appears that to every kind of soil or bed there corresponds a certain velocity of current, too small to hurt it by digging it up, and too great to allow the deposition of the materials which it is carrying along. Supposing this known for any particular situation, and the quantity of water which the channel must of necessity discharge, we may wish to learn the smallest slope which must be given to this stream, that the waters may run with the required velocity. This suggests

PROB. I. Given the discharge D of a river, and V its velocity of regimen: required the smallest slope s , and the dimensions of its bed?

Since the slope must be the smallest possible, the bed must have the form which will give the greatest mean depth d , and should therefore be the trapezium formerly described; and its area and perimeter are the same with those of a rectangle whose breadth is twice its height

b . These circumstances give us the equation $\frac{D}{V} = 2b^2$. For the area of the section is twice the square of the height, and the discharge is the product of this area and the velocity. Therefore $\sqrt{\frac{D}{2V}} = b$ and $\sqrt{\frac{2D}{V}} =$ the breadth b .

The formula of uniform motion gives $\sqrt{s} = L\sqrt{s+1,6} = \frac{297(\sqrt{d}-0,1)}{V+0,3(\sqrt{d}-0,1)}$. Instead of $\sqrt{d}-0,1$, put its equal $\sqrt{\frac{b}{2}}-0,1$, and every thing being known in the second member of this equation, we easily get the value of s by a few trials after the following manner. Suppose that the second member is equal to any number, such as 9. First suppose that $\sqrt{s}$ is = 9. Then the hyperbolic logarithm of $9+1,6$ or of $10,6$ is 2,36. Therefore we have $\sqrt{s}-L\sqrt{s+1,6} = 9-2,36 = 6,64$; whereas it should have been = 9. Therefore say $6,64 : 9 = 9 : 12,2$ nearly. Now suppose that $\sqrt{s}$ is = 12,2. Then $L 12,2+1,6 = L 13,8 = 2,625$ nearly, and $12,2-2,625$ is 9,575, whereas it should be 9. Now we find that changing the value of $\sqrt{s}$ from 9 to 12,2 has changed the answer from 6,64 to 9,575, or a change of 3,2 in our assumption has made a change of 2,935 in the answer, and has left an error of 0,575. Therefore say $2,935 : 0,575 = 3,2 : 0,628$. Then, taking 0,628 from 12,2, we have (for our next assumption or value of $\sqrt{s}$) 11,572. Now $11,572+1,6 = 13,172$, and $L 13,172$ is 2,58 nearly. Now try this last value $11,572-2,58$ is 9,008, sufficiently exact. This may serve as a specimen of the trials by which we may avoid an intricate analysis.

PROB. II. Given the discharge D , the slope s , and the velocity V , of permanent regimen, to find the dimensions of the bed.

Let x be the width, and y the depth of the channel, and S the area of the section. This must be $= \frac{D}{V}$, which is therefore $= xy$. The denominator s being given,

Practical Inferences. given, we may make $\sqrt{s} - L\sqrt{s+1,6} = \sqrt{B}$, and the formula of mean velocity will give $V = \frac{297(\sqrt{d}-0,1)}{\sqrt{B}}$ $-0,3(\sqrt{d}-0,1)$, which we may express thus: $V = \frac{(\sqrt{d}-0,1)(\frac{297}{\sqrt{B}}-0,3)}{\frac{297}{\sqrt{B}}-0,3}$ $\sqrt{d}-0,1$; and finally, $\frac{V}{\frac{297}{\sqrt{B}}-0,3} + 0,1 = \sqrt{d}$.

Having thus obtained what we called the mean depth, we may suppose the section rectangular. This gives $d = \frac{xy}{x+2y}$. Thus we have two equations, $S = xy$ and $d = \frac{xy}{x+2y}$.

From which we obtain $x = \sqrt{\left(\frac{S}{2d}\right)^2 - 2S} + \frac{S}{2d}$.

And having the breadth x and area S , we have $y = \frac{S}{x}$. And then we may change this for the trapezium often mentioned.

These are the chief problems on this part of the subject, and they enable us to adjust the slope and channel of a river which receives any number of successive permanent additions by the influx of other streams. This last informs us of the rise which a new supply will produce, because the additional supply will require additional dimensions of the channel; and as this is not supposed to increase in breadth, the addition will be in depth. The question may be proposed in the following problem.

PROB. III. Given the slope s , the depth and the base of a rectangular bed (or a trapezium), and consequently the discharge D , to find how much the section will rise, if the discharge be augmented by a given quantity.

Let b be the height after the augmentation, and w the width for the rectangular bed. We have in any uniform current $\sqrt{d} = \frac{V}{\frac{297}{\sqrt{B}}-0,3}$. Raising this to a square,

and putting for d and V their values $\frac{wb}{w+2b}$ and $\frac{D}{wb}$, and making $\frac{297}{\sqrt{B}}-0,3 = K$, the equation becomes $\frac{wb}{w+2b} = \left(\frac{D}{wbK} + 0,1\right)^2$. Raising the second member to a square, and reducing, we obtain a cubic equation, to be solved in the usual manner.

But the solution would be extremely complicated. We may obtain a very expeditious and exact approximation from this consideration, that a small change in one of the dimensions of the section will produce a much greater change in the section and the discharge than in the mean depth d . Having therefore augmented the unknown dimension, which is here the height, make use of this to form a new mean depth, and then

the new equation $\sqrt{d} = \frac{D}{wb(\frac{297}{\sqrt{B}}-0,3)} + 0,1$ will

Practical Inferences. give us another value of b , which will rarely exceed the truth by $\frac{1}{10}$. This serves (by the same process) for finding another, which will commonly be sufficiently exact. We shall illustrate this by an example.

Let there be a river whose channel is a rectangle 150 feet wide and six feet deep, and which discharges 1500 cubic feet of water per second, having a velocity of 20 inches, and slope of $\frac{1}{11880}$, or about $\frac{1}{12}$ of an inch in 100 fathoms. How much will it rise if it receives an addition which triples its discharge? and what will be its velocity?

If the velocity remained the same, its depth would be tripled; but we know by the general formula that its velocity will be greatly increased, and therefore its depth will not be tripled. Suppose it to be doubled, and to become 12 feet. This will give $d = 10,34483$, or 124,138 inches; then the equation $\sqrt{d}-0,1 =$

$\frac{D}{wb(\frac{297}{\sqrt{B}}-0,3)}$, or $b = \frac{D}{w(\sqrt{d}-0,1)(\frac{297}{\sqrt{B}}-0,3)}$, and

in which we have $\sqrt{B} = 107,8$, $D = 4500$; $\sqrt{d}-0,1 = 11,0417$, will give $b = 13,276$; whereas it should have been 12. This shows that our calculated value of d was too small. Let us therefore increase the depth by 0,9, or make it 12,9, and repeat the calculation. This will give us $\sqrt{d}-0,1 = 11,3927$, and $b = 12,867$, instead of 13,276. Therefore augmenting our data 0,9 changes our answer 0,409. If we suppose these small changes to retain their proportions, we may conclude that if 12 be augmented by the quantity $x \times 0,9$, the quantity 13,276 will diminish by the quantity $x \times 0,409$. Therefore, that the estimated value of b may agree with the one which results from the calculation, we must have $12 + x \times 0,9 = 13,276 - x \times 0,409$.

This will give $x = \frac{1,276}{1,309} = 0,9748$, and $x \times 0,9 = 0,8773$; and $b = 12,8773$. If we repeat the calculation with this value of b , we shall find no change.

This value of b gives $d = 131,8836$ inches. If we now compute the new velocity by dividing the new discharge 4500 by the new area $150 \times 12,8773$, we shall find it to be 27,95 inches, in place of 20, the former velocity.

We might have made a pretty exact first assumption, by recollecting what was formerly observed, that when the breadth is very great in proportion to the depth, the mean depth differs insensibly from the real depth, or rather follows nearly the same proportions, and that the velocities are proportional to the square roots of the depths. Call the first discharge d , the height b , and velocity v , and let D , H , and V , express these things in their augmented state. We have $v = \frac{d}{wb}$ and

$V = \frac{D}{wH}$, and $v : V = \frac{d}{b} : \frac{D}{H}$, and $v^2 : V^2 = \frac{d^2}{b^2} : \frac{D^2}{H^2}$.

But by this remark $v^2 : V^2 = b : H$. Therefore $b : H = \frac{d^2}{b^2} : \frac{D^2}{H^2}$, and $\frac{bD^2}{H^2} = \frac{Hd^2}{b^2}$, and $b^3 D^2 = H^3 d^2$, and $d^2 : D^2 = b^3 : H^3$ (a useful theorem) and $H^3 = \frac{b^3 D^2}{d^2}$, and $H = \sqrt[3]{\frac{b^3 D^2}{d^2}} = 12,48$.

Or we might have made the same assumption by the remark

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remark also formerly made on this case, that the squares of the discharges are nearly as the cubes of the height, or $1500^2 : 4500^2 = 6^3 : 12,48^3$.

And in making these first guesses we shall do it more exactly, by recollecting that a certain variation of the mean depth d requires a greater variation of the height, and the increment will be to the height nearly as half the height to the width, as may easily be seen. There-

fore, if we add to 12,48 its $\frac{6,24}{150}$ th part, or its 24th part, viz. 0,52, we have 13 for our first assumption, exceeding the truth only an inch and a half. We mention these circumstances, that those who are disposed to apply these doctrines to the solution of practical cases may be at no loss when one occurs of which the regular solution requires an intricate analysis.

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The in-
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the pro-
blems show
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of enlarg-
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section of
a river,

It is evident that the inverse of the foregoing problems will show the effects of enlarging the section of a river, that is, will show how much its surface will be sunk by any proposed enlargement of its bed. It is therefore needless to propose such problems in this place. Common sense directs us to make these enlargements in those parts of the river where their effect will be greatest, that is, where it is shallowest when its breadth greatly exceeds its depth, or where it is narrowest (if its depth exceed the breadth, which is a very rare case), or in general, where the slope is the smallest for a short run.

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And direct
us in the
method of
embank-
ments.

The same general principles direct us in the method of embankments, for the prevention of floods, by enabling us to ascertain the heights necessary to be given to our banks. This will evidently depend, not only on the additional quantity of water which experience tells us a river brings down during its freshes, but also on the distance at which we place the banks from the natural banks of the river. This is a point where mistaken economy frequently defeats its own purpose. If we raise our embankment at some distance from the natural banks of the river, not only will a smaller height suffice, and consequently a smaller base, which will make a saving in the duplicate proportion of the height; but our works will be so much the more durable nearly, if not exactly, in the same proportion. For by thus enlarging the additional bed which we give to the swollen river, we diminish its velocity almost in the same proportion that we enlarge its channel, and thus diminish its power of ruining our works. Except, therefore, in the case of a river whose freshes are loaded with fine sand to destroy the turf, it is always proper to place the embankment at a considerable distance from the natural banks. Placing them at half the breadth of the stream from its natural banks, will nearly double its channel; and, except in the case now mentioned, the space thus detached from our fields will afford excellent pasture.

The limits of such a work as ours will not permit us to enter into any detail on the method of embankment. It would require a volume to give instructions as to the manner of founding, raising, and securing the dykes which must be raised, and a thousand circumstances which must be attended to. But a few general observations may be made, which naturally occur while we are considering the manner in which a river works in settling or altering its channel.

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It must be remarked, in the first place, that the river will rise higher when embanked than it does while it was allowed to spread; and it is by no means easy to conclude to what height it will rise from the greatest height to which it has been observed to rise in its floods. When at liberty to expand over a wide valley; then it could only rise till it overflowed with a thickness or depth of water sufficient to produce a motion backwards into the valley quick enough to take off the water as fast as it was supplied; and we imagine that a foot or two would suffice in most cases. The best way for a prudent engineer will be to observe the utmost rise remembered by the neighbours in some gorge, where the river cannot spread out. Measure the increased section in this place, and at the same time recollect, that the water increases in a much greater proportion than the section; because an increase of the hydraulic mean depth produces an increase of velocity in the duplicate proportion of the depth nearly. But as this augmentation of velocity will obtain also between the embankments, it will be sufficiently exact to suppose that the section must be increased here nearly in the same proportion as at the gorge already mentioned. Neglecting this method of information, and regulating the height of our embankment by the greatest swell that has been observed in the plain, will assuredly make them too low, and render them totally useless.

A line of embankment should always be carried on by a strict concert of the proprietors of both banks through its whole extent. A greedy proprietor, by advancing his own embankment beyond that of his neighbours, not only exposes himself to risk by the working of the waters on the angles which this will produce, but exposes his neighbours also to danger, by narrowing the section, and thereby raising the surface and increasing the velocity, and by turning the stream athwart, and causing it to shoot against the opposite bank. The whole should be as much as possible in a line; and the general effect should be to make the course of the stream straighter than it was before. All bends should be made more gentle, by keeping the embankment further from the river in all convex lines of the natural bank, and bringing it nearer where the bank is concave. This will greatly diminish the action of the waters on the bankment, and insure their duration. The same maxim must be followed in fencing any brook which discharges itself into the river. The bends given at its mouth to the two lines of embankment should be made less acute than those of the natural brook, although, by this means, two points of land are left out. And the opportunity should be embraced of making the direction of this transverse brook more sloping than before, that is, less athwart the direction of the river.

It is of great consequence to cover the outside of the dyke with very compact turf closely united. If it admit water, the interior part of the wall, which is always more porous, becomes drenched in water, and this water acts with its statical pressure, tending to burst the bank on the land-side, and will quickly shift it from its seat. The utmost care should therefore be taken to make it and keep it perfectly tight. It should be a continued fine turf, and every bare spot should be carefully covered with fresh sod; and rat holes must be carefully closed up.

Of

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Of the
slope re-
quired at
the bend
of a river,
and the
conse-
quences.

Of straightening or changing the course of rivers.

We have seen, that every bending of a river requires an additional slope in order to continue its train, or enable it to convey the same quantity of water without swelling in its bed. Therefore the effect of taking away any of these bends must be to sink the waters of the river. It is proper, therefore, to have it in our power to estimate these effects. It may be desirable to gain property, by taking away the sweeps of a very winding stream. But this may be prejudicial, by destroying the navigation on such a river. It may also hurt the proprietors below, by increasing the velocity of the stream, which will expose them to the risk of its overflowing, or of its destroying its bed, and taking a new course. Or this increase of velocity may be inconsistent with the regimen of the new channel, or at least require larger dimensions than we should have given it if ignorant of this effect.

Our principles of uniform motion enable us to answer every question of this kind which can occur; and Mr de Buat proposes several problems to this effect. The regular solutions of them are complicated and difficult; and we do not think them necessary in this place, because they may all be solved in a manner not indeed so elegant, because indirect, but abundantly accurate, and easy to any person familiar with those which we have already considered.

We can take the exact level across all these sweeps, and thus obtain the whole slope. We can measure with accuracy the velocity in some part of the channel which is most remote from any bend, and where the channel itself has the greatest regularity of form. This will give us the expence or discharge of the river, and the mean depth connected with it. We can then examine whether this velocity is precisely such as is compatible with stability in the straight course. If it is, it is evident that if we cut off the bends, the greater slope which this will produce will communicate to the waters a velocity incompatible with the regimen suited to this soil, unless we enlarge the width of the stream, that is, unless we make the new channel more capacious than the old one. We must now calculate the dimensions of the channel which, with this increased slope, will conduct the waters with the velocity that is necessary. All this may be done by the foregoing problems; and we may easiest accomplish this by steps. First, suppose the bed the same with the old one, and calculate the velocity for the increased slope by the general formula. Then change one of the dimensions of the channel, so as to produce the velocity we want, which is a very simple process. And in doing this, the object to be kept chiefly in view is not to make the new velocity such as will be incompatible with the stability of the new bed.

Having accomplished this first purpose, we learn (in the very solution) how much shallower this channel with its greater slope will be than the former, while it discharges all the waters. This diminution of depth must increase the slope and the velocity, and must diminish the depth of the river, above the place where the alteration is to be made. How far it produces these effects may be calculated by the general formula. We then see whether the navigation will be hurt, either in the old river up the stream, or in the new channel. It is

plain that all these points cannot be reconciled. We may make the new channel such, that it shall leave a velocity compatible with stability, and that it shall not diminish the depth of the river up the stream. But, having a greater slope, it must have a smaller mean depth, and also a smaller real depth, unless we make it of a very inconvenient form.

The same things viewed in a different light, will show us what depression of waters may be produced by rectifying the course of a river in order to prevent its overflowing. And the process which we would recommend is the same with the foregoing. We apprehend it to be quite needless to measure the angles of rebound, in order to compute the slope which is employed for sending the river through the bend, with a view to supersede this by straightening the river. It is infinitely easier and more exact to measure the levels themselves, and then we know the effect of removing them.

Nor need we follow Mr de Buat in solving problems for diminishing the slope and velocity, and deepening the channel of a river by bending its course. The expence of this would be in every case enormous; and the practices which we are just going to enter upon afford infinitely easier methods of accomplishing all the purposes which are to be gained by these changes.

Of Bars, Weirs, and Jetteys, for raising the Surface of Rivers.

We propose, under the article *WATER-Works*, to consider in sufficient practical detail all that relates to the construction and mechanism of these and other erections in water; and we confine ourselves, in this place, to the mere effect which they will produce on the current of the river.

We gave the name of *weir* or *bar* to a dam erected across a river for the purpose of raising its waters, whether in order to take off a draft for a mill or to deepen the channel. Before we can tell the effect which they will produce, we must have a general rule for ascertaining the relation between the height of the water above the lip of the weir or bar, and the quantity of water which will flow over.

First, then, with respect to a weir, represented in fig. 18. and fig. 18. n° 2. The latter figure more resembles their usual form, consisting of a dam of solid masonry, or built of timber, properly fortified with shoars and banks. On the top is set up a strong plank FR, called the wasteboard, or waster, over which the water flows. This is brought to an accurate level, of the proper height. Such voiders are frequently made in the side of a mill-course, for letting the superfluous water run off. This is properly the *WASTER, VOIDER*: it is also called an *OFFSET*. The same observations will explain all these different pieces of practice. The following questions occur in course.

PROB. I. Given the length of an offset or wasteboard, made in the face of a reservoir of stagnant water, and the depth of its lip under the horizontal surface of the water, to determine the discharge, or the quantity of water which will run over in a second?

Let AB be the horizontal surface of the still water, and F the lip of the wasteboard. Call the depth BF under the surface *b*, and the length of the wasteboard *l*. N. B. The water is supposed to flow over into another basin or channel, so much lower that the surface

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HL of the water is lower, or at least not higher, than F.

If the water could be supported at the height BF, BF might be considered as an orifice in the side of a vessel. In which case, the discharge would be the same as if the whole water were flowing with the velocity acquired from the height $\frac{1}{2}$ BF, or $\frac{1}{2}b$. And if we suppose that there is no contraction at the orifice, the mean velocity would be $\sqrt{2g\frac{1}{2}b} = \sqrt{772\frac{1}{2}b}$, in English inches per second. The area of this orifice is lb . Therefore the discharge would be $lb\sqrt{772\frac{1}{2}b}$, all being measured in inches. This is the usual theory; but it is not an exact representation of the manner in which the efflux really happens. The water cannot remain at the height BF; but in drawing towards the wasteboard from all sides, it forms a convex surface AIH, so that the point I, where the vertical drawn from the edge of the wasteboard meets the curve, is considerably lower than B. But as all the mass above F is supposed perfectly fluid, the pressure of the incumbent water is propagated, in the opinion of Mr de Buat, to the filament passing over at F without any diminution. The same may be said of any filament between F and I. Each tends, therefore, to move in the same manner as if it were really impelled through an orifice in its place. Therefore the motions through every part of the line or plane IF are the same as if the water were escaping through an orifice IF, made by a sluice let down on the water, and keeping up the water of the reservoir to the level AB. It is beyond a doubt (says he) that the height IF must depend on the whole height BF, and that there must be a certain determined proportion between them. He does not attempt to determine this proportion theoretically, but says, that his experiments ascertain it with great precision to be the proportion of one to two, or that IF is always one-half of BF. He says, however, that this determination was not by an immediate and direct measurement; he concluded it from the comparison of the quantities of water discharged under different heights of the water in the reservoir.

We cannot help thinking that this reasoning is very defective in several particulars. It cannot be inferred, from the laws of hydrostatical pressure, that the filament at I is pressed forward with all the weight of the column BI. The particle I is really at the surface; and considering it as making part of the surface of a running stream, it is subjected to hardly any pressure, any more than the particles on the surface of a cup of water held in the hand, while it is carried round the axis of the earth and round the sun. Reasoning according to his own principles, and availing himself of his own discovery, he should say, that the particle at I has an accelerating force depending on its slope only; and then he should have endeavoured to ascertain this slope. The motion of the particle at I has no immediate connection with the pressure of the column BI; and if it had, the motion would be extremely different from what it is: for this pressure alone would give it the velocity which Mr Buat assigns it. Now it is already passing through the point I with the velocity which it has acquired in descending along the curve AI; and this is the real state of the case. The particles are passing through with a velocity already acquired by a sloping current; and they are accelerated

by the hydrostatical pressure of the water above them. The internal mechanism of these motions is infinitely more complex than Mr Buat here supposes; and on this supposition, he very nearly abandons the theory which he has so ingeniously established, and adopts the theory of Guglielmini which he had exploded. At the same time, we think that he is not much mistaken when he asserts, that the motions are nearly the same as if a sluice had been let down from the surface to I. For the filament which passes at I has been gliding down a curved surface, and has not been exposed to any friction. It is perhaps the very case of hydraulics, where the obstructions are the smallest; and we should therefore expect that its motion will be the least retarded.

We have therefore no hesitation in saying, that the filament at I is in the very state of motion which the theory would assign to it if it were passing under a sluice, as Mr Buat supposes. And with respect to the inferior filaments, without attempting the very difficult task of investigating their motions, we shall just say, that we do not see any reason for supposing that they will move slower than our author supposes. Therefore, though we reject his theory, we admit his experimental proposition in general; that is, we admit that the whole water which passes through the plane IF moves with the velocity (though not in the same direction) with which it would have run through a sluice of the same depth; and we may proceed with his determination of the quantity of water discharged.

If we make BC the axis of a parabola BEGH, the velocities of the filaments passing at I and F will be represented by the ordinates IE and FG, and the discharge by the area IEGF. This allows a very neat solution of the problem. Let the quantity discharged per second be D, and let the whole height BF be b . Let $2G$ be the quantity by which we must divide the square of the mean velocity, in order to have the producing height. This will be less than $2g$, the acceleration of gravity, on account of the convergency at the sides and the tendency to convergence at the lip F. We formerly gave for its measure 726 inches, instead of 772, and said that the inches discharged per second from an orifice of one inch were 26,49, instead of 27,78. Let x be the distance of any filament from the horizontal line AB. An element of the orifice, therefore, (for we may give it this name) is $l\dot{x}$. The velocity of this element is $\sqrt{2Gx}$, or $\sqrt{2G} \times \sqrt{x}$. The discharge from it is $l\sqrt{2G}x^{\frac{1}{2}}\dot{x}$, and the fluent of this, or $D = \int l\sqrt{2G}x^{\frac{1}{2}}\dot{x}$, which is $\frac{2}{3}l\sqrt{2G}x^{\frac{3}{2}} + C$.

To determine the constant quantity C, observe that Mr de Buat found by experiment that BI was in all cases $\frac{1}{2}$ BF. Therefore D must be nothing when $x = \frac{1}{2}b$; consequently $C = -\frac{2}{3}l\sqrt{2G}\left(\frac{b}{2}\right)^{\frac{3}{2}}$, and the completed fluent, will be $D = \frac{2}{3}l\sqrt{2G}\left(x^{\frac{3}{2}} - \left(\frac{b}{2}\right)^{\frac{3}{2}}\right)$.

Now make $x = b$, and we have

$$D = \frac{2}{3}l\sqrt{2G}\left(b^{\frac{3}{2}} - \left(\frac{b}{2}\right)^{\frac{3}{2}}\right) = \frac{2}{3}l\sqrt{2G}\left(1 - \left(\frac{1}{2}\right)^{\frac{3}{2}}\right)b^{\frac{3}{2}}.$$

But $1 - \left(\frac{1}{2}\right)^{\frac{3}{2}} = 0,64645$, and $\frac{2}{3}$ of this is 0,431: Therefore, finally,

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$$D = 0.431 (\sqrt{2G} b^{\frac{1}{2}} \times l).$$

If we now put 26.49 or $26\frac{1}{2}$ for $\sqrt{2G}$, or the velocity with which a head of water of one inch will impel the water over a weir, and multiply this by 0.431, we get the following quantity 11.4172, or, in numbers of easy recollection, $11\frac{1}{2}$, for the cubic inches of water per second, which runs over every inch of a wasteboard when the edge of it is one inch below the surface of the reservoir; and this must be multiplied by $b^{\frac{1}{2}}$, or by the square root of the cube of the head of water. Thus let the edge of the wasteboard be four inches below the surface of the water. The cube of this is 64, of which the square root is eight. Therefore a wasteboard of this depth under the surface, and three feet long, will discharge every second $8 \times 36 \times 11\frac{1}{2}$ cubic inches of water, or $1\frac{8}{15}$ cubic feet, English measure.

The following comparisons will show how much this theory may be depended on. Col. 1. shows the depth of the edge of the board under the surface; 2. shows the discharge by theory; and, 3. the discharge actually observed. The length of the board was $18\frac{1}{2}$ inches. N. B. The number in Mr Buat's experiments are here reduced to English measure.

D.	D. Theor.	D. Exp.	E.
1.778	506	524	28.98
3.199	1222	1218	69.83
4.665	2153	2155	123.03
6.753	3750	3771	214.29

The last column is the cubic inches discharged in a second by each inch of the wasteboard. The correspondence is undoubtedly very great. The greatest error is in the first, which may be attributed to a much smaller lateral contraction under so small a head of water.

But it must be remarked, that the calculation proceeds on two suppositions. The height FI is supposed $\frac{1}{2}$ of BI; and $2G$ is supposed 726. It is evident, that by increasing the one and diminishing the other, nearly the same answers may be produced, unless much greater variations of b be examined. Both of these quantities are matters of considerable uncertainty, particularly the first; and it must be farther remarked, that this was not measured, but deduced from the uniformity of the experiments. We presume that Mr Buat tried various values of G , till he found one which gave the ratios of discharge which he observed. We beg leave to observe, that in a set of numerous experiments which we had access to examine, BI was uniformly much less than $\frac{1}{2}$; it was very nearly $\frac{2}{7}$; and the quantity discharged was greater than what would result from Mr Buat's calculation. It was farther observed, that IF depended very much on the form of the wasteboard. When it was a very thin board of considerable depth, IF was very considerably greater than if the board was thick, or narrow, and set on the top of a broad dam-head, as in fig. 18. n° 2.

It may be proper to give the formula a form which will correspond to any ratio which experience may discover between BF and IF. Thus, let BI be $\frac{m}{n}$ BF.

The formula will be $D = \frac{2}{3} l \sqrt{2G} \left(1 - \left(\frac{m}{n}\right)^{\frac{1}{2}}\right) b^{\frac{1}{2}}$

It is hoped that this and some other fundamental facts in practical hydraulics will soon be determined by accurate experiments. The Honourable Board for Fish-

eries and Improvements in Scotland have allotted a sum of money for making the necessary experiments, and the results will be published by their authority. Meantime, this theory of Mr de Buat is of great value to the practical engineer, who at present must content himself with a very vague conjecture, or take the calculation of the erroneous theory of Guglielmini. By that theory, the board of three feet, at the depth of four inches, should discharge nearly $3\frac{1}{5}$ cubic feet per second, which is almost double of what it really delivers.

We presume, therefore, that the following table will be acceptable to practical engineers, who are not familiar with such computations. It contains, in the first column, the depth in English inches from the surface of the stagnant water of a reservoir to the edge of the wasteboard. The second column is the cubic feet of water discharged in a minute by every inch of the wasteboard.

Depth.	Discharge.
1	0.403
2	1.140
3	2.095
4	3.225
5	4.507
6	5.925
7	7.466
8	9.122
9	10.884
10	12.748
11	14.707
12	16.758
13	18.895
14	21.117
15	23.419
16	25.800
17	28.258
18	30.786

When the depth does not exceed four inches, it will not be exact enough to take proportional parts for the fractions of an inch. The following method is exact.

If they be odd quarters of an inch, look in the table for as many inches as the depth contains quarters, and take the eighth part of the answer. Thus, for $3\frac{1}{4}$ inches, take the eighth part of 23.419, which corresponds to 15 inches. This is 2.927.

If the wasteboard is not on the face of a dam, but in a running stream, we must augment the discharge by multiplying the section by the velocity of the stream. But this correction can seldom occur in practice; because, in this case, the discharge is previously known; and it is b that we want; which is the object of the next problem.

We only beg leave to add, that the experiments which we mention as having been already made in this country, give a result somewhat greater than this table, viz. about $\frac{1}{16}$. Therefore, having obtained the answer by this table, add to it its 16th part, and we apprehend that it will be extremely near the truth.

When, on the other hand, we know the discharge over a wasteboard, we can tell the depth of its edge under the surface of the stagnant water of the reservoir,

because we have $b = \left(\frac{D}{11\frac{1}{2}l}\right)^{\frac{2}{3}}$ very nearly.

We

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We are now in a condition to solve the problem respecting a weir across a river.

PROB. II. The discharge and section of a river being given, it is required to determine how much the waters will be raised by a weir of the whole breadth of the river, discharging the water with a clear fall, that is, the surface of the water in the lower channel being below the edge of the weir?

In this case we have $2G = 746$ nearly, because there will be no contraction at the sides when the weir is the whole breadth of the river. But further, the water is not now stagnant, but moving with the velocity $\frac{D}{S}$, S being the section of the river.

Therefore let a be the height of the weir from the bottom of the river, and b the height of the water above the edge of the weir. We have the velocity with which the water approaches the weir $= \frac{D}{l(a+b)}$,

l being the length of the weir or breadth of the river. Therefore the height producing the primary mean velocity is $\left(\frac{D}{l\sqrt{2g}(a+b)}\right)^2$. The equation given a

little ago will give $b = \left(\frac{D}{0.431l\sqrt{2G}}\right)^{\frac{2}{3}}$, when the water above the weir is stagnant. Therefore, when it is already moving with the velocity $\frac{D}{la+b}$, we shall

have $b = \left(\frac{D}{0.431\sqrt{2G}}\right)^{\frac{2}{3}} - \left(\frac{D}{l\sqrt{2g}(a+b)}\right)^2$. It would be very troublesome to solve this equation regularly, because the unknown quantity b is found in the second term of the answer. But we know that the height producing the velocity above the weir is very small in comparison of b and of a , and, if only estimated roughly, will make a very insensible change in the value of b ; and, by repeating the operation, we can correct this value, and obtain b to any degree of exactness.

To illustrate this by an example. Suppose a river, the section of whose stream is 150 feet, and that it discharges 174 cubic feet of water in a second; how much will the waters of this river be raised by a weir of the same width, and 3 feet high?

Suppose the width to be 50 feet. This will give 3 feet for the depth; and we see that the water will have a clear fall, because the lower stream will be the same as before.

The section being 150 feet, and the discharge 174, the mean velocity is $\frac{174}{150} = 1.16$ feet, $= 14$ inches nearly, which requires the height of $\frac{1}{4}$ of an inch very nearly. This may be taken for the second term of the

value of b . Therefore $b = \left(\frac{D}{0.431\sqrt{2G}l}\right)^{\frac{2}{3}} - \frac{1}{4}$. Now $\sqrt{2G}$ is, in the present case, $= 27.313$; l is 600, and D is $174 \times 1728 = 300672$. Therefore $b = 12.192 - 0.25 = 11.942$. Now correct this value of b , by correcting the second term, which is $\frac{1}{4}$ of an inch, in-

stead of $\left(\frac{D}{\sqrt{2g}l(a+b)}\right)^2$, or 0.141. This will give us $b = 12.192 - 0.141 = 12.051$, differing from the first value about $\frac{1}{80}$ of an inch. It is needless to carry

the approximation farther. Thus we see that a weir, which dams up the whole of the former current of three feet deep, will only raise the waters of this river one foot.

The same rule serves for showing how high we ought to raise this weir in order to produce any given rise of the waters, whether for the purposes of navigation, or for taking off a draft to drive mills, or for any other service; for if the breadth of the river remain the same, the water will still flow over the weir with nearly the same depth. A very small and hardly perceptible difference will indeed arise from the diminution of slope occasioned by this rise, and a consequent diminution of the velocity with which the river approaches the weir. But this difference must always be a small fraction of the second term of our answer; which term is itself very small: and even this will be compensated, in some degree, by the freer fall which the water will have over the weir.

If the intended weir is not to have the whole breadth of the river (which is seldom necessary even for the purposes of navigation), the waters will be raised higher by the same height of the wasteboard. The calculation is precisely the same for this case. Only in the second term, which gives the head of water corresponding to the velocity of the river, l must still be taken for the whole breadth of the river, while in the first term l is the length of the wasteboard. Also $\sqrt{2G}$ must be a little less, on account of the contractions at the ends of the weir, unless these be avoided by giving the masonry at the ends of the wasteboard a curved shape on the upper side of the wasteboard. This should not be done when the sole object of the weir is to raise the surface of the waters. Its effect is but trifling at any rate, when the length of the wasteboard is considerable, in proportion to the thickness of the sheet of water flowing over it.

The following comparisons of this rule with experiment will give our readers some notion of its utility.

Discharge of the Weir per Second.	Head producing the velocity at the Weir.	Head producing the Velocity above it.	Calculated Height of the River above the Wasteboard.	Observed Height.
<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>
3888	7,302	0,625	6,677	6,583
2462	5,385	0,350	5,035	4,750
1112	3,171	0,116	3,055	3,166
259	1,201	0,0114	1,189	1,250

It was found extremely difficult to measure the exact height of the water in the upper stream above the wasteboard. The curvature AI extended several feet up the stream. Indeed there must be something arbitrary in this measurement, because the surface of the stream is not horizontal. The deviation should be taken, not from a horizontal plane, but from the inclined surface of the river.

It is plain that a river cannot be fitted for continued navigation by weirs. These occasion interruptions; but a few inches may sometimes be added to the waters of a river by a bar, which may still allow a flat-bottomed lighter or a raft to pass over it. This is a very frequent practice in Holland and Flanders; and a very cheap

cheap and certain conveyance of goods is there obtained by means of streams which we would think no better than boundary ditches, and unfit for every purpose of this kind. By means of a bar the water is kept up a very few inches, and the stream has free course to the sea. The shoot over the bar is prevented by means of another bar placed a little way below it, lying flat in the bottom of the ditch, but which may be raised up on hinges. The lighterman makes his boat fast to a stake immediately above the bar, raises the lower bar, brings over his boat, again makes it fast, and, having laid down the other bar again, proceeds on his journey. This contrivance answers the end of a lock at a very trifling expence; and though it does not admit of what we are accustomed to call navigation, it gives a very sure conveyance, which would otherwise be impossible. When the waters can be raised by bars, so that they may be drawn off for machinery or other purposes, they are preferable to weirs, because they do not obstruct floating with rafts, and are not destroyed by the ice.

PROB. III. Given the height of a bar, the depth of water both above and below it, and the width of the river, to determine the discharge?

This is by no means so easily solved as the discharge over a weir, and we cannot do it with the same degree of evidence. We imagine, however, that the following observations will not be very far from a true account of the matter.

We may first suppose a reservoir LFBM (fig. 19.) of stagnant water, and that it has a wasteboard of the height CB. We may then determine, by the foregoing problems, the discharge through the plane EC. With respect to the discharge through the part CA, it should be equal to this product of the part of the section by the velocity corresponding to the fall EC, which is the difference of the heights of water above and below the bar; for, because the difference of Ea and Ca is equal to EC, every particle a of water in the plane CA is pressed in the direction of this stream with the same force, viz. the weight of the column EC. The sum of these discharges should be the whole discharge over the bar; but since the bar is set up across a running river, its discharge must be the same with that of the river. The water of the river, when it comes to the place of the bar, has acquired some velocity by its slope or other causes, and this corresponds to some height FE. This velocity, multiplied by the section of the river, having the height EB, should give a discharge equal to the discharge over the bar.

To avoid this complication of conditions, we may first compute the discharge of the bar in the manner now pointed out, without the consideration of the previous velocity of the stream. This discharge will be a little too small. If we divide it by the section FB, it will give a primary velocity too small, but not far from the truth. Therefore we shall get the height FE, by means of which we shall be able to determine a velocity intermediate between DG and CH, which would correspond to a weir, as also the velocity CH, which corresponds to the part of the section CA, which is wholly under water. Then we correct all these quantities by repeating the operation with them instead of our first assumptions.

Mr Buat found this computation extremely near the truth, but in all cases a little greater than observation exhibited.

We may now solve the problem in the most general terms.

PROB. IV. Given the breadth, depth, and the slope of a river, if we confine its passage by a bar or weir of a known height and width, to determine the rise of the waters above the bar.

The slope and dimensions of the channel being given, our formula will give us the velocity and the quantity of water discharged. Then, by the preceding problem, find the height of water above the wasteboard. From the sum of these two heights deduct the ordinary depth of the river. The remainder is the rise of the waters. For example:

Let there be a river whose ordinary depth is 3 feet, and breadth 40, and whose slope is $1\frac{1}{2}$ inches in 100 fathoms, or $\frac{1}{133.3}$. Suppose a weir on this river 6 feet high and 18 feet wide.

We must first find the velocity and discharge of the river in its natural state, we have $l = 480$ inches, $b = 36$, $\frac{1}{f} = \frac{1}{133.3}$. Our formula of uniform motion gives

$V = 23.45$, and $D = 405216$ cubic inches.

The contraction obtains here on the three sides of the orifice. We may therefore take $\sqrt{2g} = 26.1$. — N. B. This example is Mr Buat's, and all the measures are French. We have also a (the height of the weir) 72, and $2g = 724$. Therefore the equation $b =$

$\left(\frac{D}{0.431\sqrt{2g}l}\right)^{\frac{2}{3}} - \left(\frac{D}{l\sqrt{2g}(a+b)}\right)^2$ becomes 30,182.

Add this to the height of the weir, and the depth of the river above the sluice is 102,182, = 8 feet and 6,182 inches. From this take 3 feet, and there remains 5 feet and 6,182 inches for the rise of the waters.

There is, however, an important circumstance in this rise of the waters, which must be distinctly understood before we can say what are the interesting effects of this weir. This swell extends, as we all know, to a considerable distance up the stream, but is less sensible as we go away from the weir. What is the distance to which the swell extends, and what increase does it produce in the depth at different distances from the weir?

If we suppose that the slope and the breadth of the channel remain as before, it is plain, that as we come down the stream from that point where the swell is insensible, the depth of the channel increases all the way to the dam. Therefore, as the same quantity of water passes through every section of the river, the velocity must diminish in the same proportion (very nearly) that the section increases. But this being an open stream, and therefore the velocity being inseparably connected with the slope of the surface, it follows, that the slope of the surface must diminish all the way from that point where the swell of the water is insensible to the dam. The surface, therefore, cannot be a simple inclined plane, but must be concave upwards, as represented in fig. 20. where FKLB represents the channel of a river, and FB the surface of the water running in it. If this be kept up to A by a weir AL, the surface will be a curve FIA, touching the natural surface F at the beginning of the swell, and the line AD which touches it in A will have the slope S corresponding to the velocity which the waters have immediately before going over the weir. We know this slope, because we

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are supposed to know the discharge of the river and its slope and other circumstances before barring it with a dam; and we know the height of the dam H , and therefore the new velocity at A , or immediately above A , and consequently the slope S . Therefore, drawing the horizontal lines DC , AG , it is plain that CB and CA will be the primary slope of the river, and the slope S corresponding to the velocity in the immediate neighbourhood of A , because these verticals have the same horizontal distance DC . We have therefore $CB : CA = S : s$ very nearly, and $S - s : s = CB - CA : CA$, $= AB$ (nearly) : CA . Therefore $CA = \frac{AB \times s}{S - s} = \frac{Hs}{S - s}$. But $DA = CA \times S$, by our definition of slope; therefore $DA = \frac{H.S.s}{S - s}$.

This is all that we can say with precision of this curve. Mr Buat examined what would result from supposing it an arch of a circle. In this case we should have $DA = DF$, and AF very nearly equal to $2 AD$: and as we can thus find AD , we get the whole length FIA of the swell, and also the distances of any part of the curve from the primitive surface FB of the river; for these will be very nearly in the duplicate proportion of their distances from F . Thus ID will be $\frac{1}{4}$ of AB , &c. Therefore we should obtain the depth $I d$ of the stream in that place. Getting the depth of the stream, and knowing the discharge, we get the velocity, and can compare this with the slope of the surface at I . This should be the slope of that part of the arch of the circle. Making this comparison, he found these circumstances to be incompatible. He found that the section and swell at I , corresponding to an arch of a circle, gave a discharge nearly $\frac{1}{4}$ th too great (they were as 405216 to 492142). Therefore the curve is such, that AD is greater than DF , and that it is more incurvated at F than at A . He found, that making DA to DF as 10 to 9, and the curve FIA an arch of an ellipse whose longer axis was vertical, would give a very nice correspondence of the sections, velocities, and slopes. The whole extent of the swell therefore can never be double of AD , and must always greatly surpass AD ; and these limits will do very well for every practical question. Therefore making $DF \frac{9}{10}$ of AD , and drawing the chord AD , and making $DI \frac{1}{2}$ of DI , we shall be very near the truth. Then we get the swell with sufficient precision for any point H between F and D , by making $FD^2 : FH^2 = ID : Hb$; and if H is between D and A , we get its distance from the tangent DA by a similar process.

It only remains to determine the swell produced in the waters of a river by the erection of a bridge or cleaning sluice which contracts the passage. This requires the solution of

PROB. V. Given the depth, breadth, and slope of a river, to determine the swell occasioned by the piers of a bridge or sides of a cleaning sluice, which contract the passage by a given quantity, for a given length of channel.

This swell depends on two circumstances.

1. The whole river must pass through a narrow space, with a velocity proportionably increased; and this requires a certain head of water above the bridge.

2. The water, in passing the length of the piers with

a velocity greater than that corresponding to the primary slope of the river, will require a greater slope in order to acquire this velocity.

Let V be the velocity of the river before the erection of the bridge, and K the quotient of the width of the river divided by the sum of the widths between the piers. If the length of the piers, or their dimension in the direction of the stream, is not very great, KV will nearly express the velocity of the river under the arches; and if we suppose for a moment the contraction (in the sense hitherto used) to be nothing, the height producing this velocity will be $\frac{K^2 V^2}{2g}$. But the river will not rise so high, having already a slope and velocity before getting under the arches, and the height corresponding to this velocity is $\frac{V^2}{2g}$; therefore the height

for producing the augmentation of velocity is $\frac{K^2 V^2}{2g}$

$-\frac{V^2}{2g}$. But if we make allowance for contraction, we must employ a $2G$ less than $2g$, and we must multiply the height now found by $\frac{2g}{2G}$. It will then become

$\left(\frac{K^2 V^2}{2g} - \frac{V^2}{2g} \right) \frac{2g}{2G} = \frac{V^2}{2G} (K^2 - 1)$. This is that part of the swell which must produce the augmentation of velocity.

With respect to what is necessary for producing the additional slope between the piers, let p be the natural slope of the river (or rather the difference of level in the length of the piers) before the erection of the bridge, and corresponding to the velocity V ; $K^2 p$ will very nearly express the difference of superficial level for the length of the piers, which is necessary for maintaining the velocity KV through the same length. The increase of slope therefore is $K^2 p - p = p(K^2 - 1)$. Therefore the whole swell will be $\left(\frac{V^2}{2G} + p \right) \frac{K^2 - 1}{1}$.

THESE are the chief questions or problems on this subject which occur in the practice of an engineer; and the solutions which we have given may in every case be depended on as very near the truth, and we are confident that the errors will never amount to one-fifth of the whole quantity. We are equally certain, that of those who call themselves engineers, and who, without hesitation, undertake jobs of enormous expence, not one in ten is able even to guess at the result of such operations, unless the circumstances of the case happen to coincide with those of some other project which he has executed, or has distinctly examined; and very few have the sagacity and penetration necessary for appreciating the effects of the distinguishing circumstances which yet remain. The society established for the encouragement of arts and manufactures could scarcely do a more important service to the public in the line of their institution, than by publishing in their Transactions a description of every work of this kind executed in the kingdom, with an account of its performance. This would be a most valuable collection of experiments and facts. The unlearned practitioner would find among them something which resembles in its chief circumstances almost any project which could occur to him in his

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his business, and would tell him what to expect in the case under his management; and the intelligent engineer, assisted by mathematical knowledge, and the habit of classing things together, would frequently be able to frame general rules. To a gentleman qualified as was the Chevalier de Buat, such a collection would be inestimable, and might suggest a theory as far superior to his as he has gone before all other writers.

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Modes of
making
small rivers
and brooks
fit for in-
land navi-
gation.

WE shall conclude this article with some observations on the methods which may be taken for rendering small rivers and brooks fit for inland navigation, or at least for floatage. We get much instruction on this subject from what has been said concerning the swell produced in a river by weirs, bars, or any diminution of its former section. Our knowledge of the form which the surface of this swell affects, will furnish rules for spacing these obstructions in such a manner, and at such distances from each other, that the swell produced by one shall extend to the one above it.

If we know the slope, the breadth, and the depth of a river, in the droughts of summer, and have determined on the height of the flood-gates, or keeps, which are to be set up in its bed, it is evident that their stations are not matters of arbitrary choice, if we would derive the greatest possible advantage from them.

Some rivers in Flanders and Italy are made navigable in some sort by simple sluices, which, being shut, form magazines of water, which, being discharged by opening the gates, raises the inferior reach enough to permit the passage of the craft which are kept on it. After this momentary rise the keeps are shut again, the water sinks in the lower reach, and the lighters which were floated through the shallows are now obliged to draw into those parts of the reach where they can lie afloat till the next supply of water from above enables them to proceed. This is a very rude and imperfect method, and unjustifiable at this day, when we know the effect of locks, or at least of double gates. We do not mean to enter on the consideration of these contrivances, and to give the methods of their construction, in this place, but refer our readers to what has been already said on this subject in the articles CANAL, LOCK, NAVIGATION (*Inland*), and to what will be said in the article *Water-Works*. At present we confine ourselves to the single point of husbanding the different falls in the bed of the river, in such a manner that there may be everywhere a sufficient depth of water: and, in what we have to deliver on the subject, we shall take the form of an example to illustrate the application of the foregoing rules.

Suppose then a river 40 feet wide and 3 feet deep in the droughts of summer, with a slope of 1 in 4800. This, by the formula of uniform motion, will have a velocity $V = 23\frac{1}{2}$ inches per second, and its discharge will be 405216 cubic inches, or 234 $\frac{1}{2}$ feet. It is proposed to give this river a depth not less than five feet in any place, by means of flood-gates of six feet high and 18 feet wide.

We first compute the height at which this body of 234 $\frac{1}{2}$ cubic feet of water will discharge itself over the flood-gates. This we shall find by Prob. II. to be 30 $\frac{1}{4}$ inches, to which adding 72, the height of the gate, we have 102 $\frac{1}{4}$ for the whole height of the water above the

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floor of the gate; the primitive depth of the river being 3 feet, the rise or swell 5 feet 6 $\frac{1}{4}$ inches. In the next place, we find the range or sensible extent of this swell by Prob. I. and the observations which accompany it. This will be found to be nearly 9177 fathoms. Now since the primitive depth of the river is three feet, there is only wanted two feet of addition; and the question is reduced to the finding what point of the curved surface of the swell is two feet above the tangent plane at the head of the swell? or how far this point is from the gate? The whole extent being 9177 fathoms, and the deviations from the tangent plane being nearly in the duplicate ratio of the distances from the point of contact, we may institute this proportion $66\frac{1}{2} : 24 = 9177^2 : 5526^2$. The last term is the distance (from the head of the swell) of that part of the surface which is two feet above the primitive surface of the river. Therefore 9177—5526, or 3651 fathoms, is the distance of this part from the flood-gate; and this is the distance at which the gates should be placed from each other. No inconvenience would arise from having them nearer, if the banks be high enough to contain the waters; but if they are farther distant, the required depth of water cannot be had without increasing the height of the gates; but if reasons of convenience should induce us to place them nearer, the same depth may be secured by lower gates, and no additional height will be required for the banks. This is generally a matter of moment, because the raising the water brings along with it the chance of flooding the adjoining fields. Knowing the place where the swell ceases to be sensible, we can keep the top of the intermediate flood-gate at the precise height of the curved surface of the swell by means of the proportionality of the deviations from the tangent to the distances from the point of contact.

But this rule will not do for a gate which is at a greater distance from the one above it than the 3651 fathoms already mentioned. We know that a higher gate is required, producing a more extensive swell; and the one swell does not coincide with the other, although they may both begin from the same point A (fig. 21.) Nor will the curves even be similar, unless the thickness of the sheet of water flowing over the gate be increased in the same ratio. But this is not the case; because the produce of the river, and therefore the thickness of the sheet of water, is constant.

But we may suppose them similar without erring more than two or three decimals of an inch; and then we shall have $AF : AL = \sqrt{F} : \sqrt{L}$; from which, if we take the thickness of the sheet of water already calculated for the other gates, there will remain the height of the gate BL.

By following these methods, instead of proceeding by random guesses, we shall procure the greatest depth of water at the smallest expence possible.

But there is a circumstance which must be attended to, and which, if neglected, may in a short time render all our works useless. These gates must frequently be open in the time of freshes; and as this channel then has its natural slope increased in every reach by the great contraction of the section in the gates, and also rolls along a greater body of water, the action of the stream on its bed must be increased by the augmentation of velocity which these circumstances will produce:

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and although we may say that the general slope is necessarily secured by the cills of the flood-gates, which are paved with stone or covered with planks, yet this will not hinder this increased current from digging up the bottom in the intervals, undermining the banks, and lodging the mud and earth thus carried off in places where the current meets with any check. All these consequences will assuredly follow if the increased velocity is greater than what corresponds to the regimen relative to the soil in which the river holds on its course.

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And of local
circumstances,

In order therefore to procure durability to works of this kind, which are generally of enormous expence, the local circumstances must be most scrupulously studied. It is not the ordinary hurried survey of an engineer that will free us from the risk of our navigation becoming very troublesome by the rise of the waters being diminished from their former quantity, and banks formed at a small distance below every sluice. We must attentively study the nature of the soil, and discover experimentally the velocity which is not inconsistent with the permanency of the channel. If this be not a great deal less than that of the river when accelerated by freshes, the regimen may be preserved after the establishment of the gate, and no great changes in the channel will be necessary: but if, on the other hand, the natural velocity of the river during its freshes greatly exceeds what is consistent with stability, we must enlarge the width of the channel, that we may diminish the hydraulic mean depth, and along with this the velocity. Therefore, knowing the quantity discharged during the freshes, divide it by the velocity of regimen, or rather by a velocity somewhat greater (for a reason which will appear by and by), the quotient will be the area of a new section. Then taking the natural slope of the river for the slope which it will preserve in this enlarged channel, and after the cills of the flood-gates have been fixed, we must calculate the hydraulic mean depth, and then the other dimensions of the channel. And, lastly, from the known dimensions of the channel and the discharge (which we must now compute), we proceed to calculate the height and the distances of the flood-gates, adjusted to their widths, which must be regulated by the room which may be thought proper for the free passage of the lighters which are to ply on the river. An example will illustrate the whole of this process.

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Illustrated
by an exam-
ple.

Suppose then a small river having a slope of 2 inches in 100 fathoms or $\frac{1}{50}$, which is a very usual declivity of such small streams, and whose depth in summer is 2 feet, but subject to floods which raise it to nine feet. Let its breadth at the bottom be 18 feet, and the base of its slanting sides $\frac{4}{3}$ of their height. All of these dimensions are very conformable to the ordinary course of things. It is proposed to make this river navigable in all seasons by means of keeps and gates placed at proper distances; and we want to know the dimensions of a channel which will be permanent, in a soil which begins to yield to a velocity of 80 inches per second, but will be safe under a velocity of 24.

The primitive channel having the properties of a rectangular channel, its breadth during the freshes must be $B = 30$ feet, or 360 inches, and its depth b 9 feet or 108 inches; therefore its hydraulic mean depth

$$d = \frac{Bb}{B+2b} = 61,88 \text{ inches. Its real velocity there-}$$

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fore, during the freshes, will be 38,9447 inches, and its discharge 1514169 cubic inches, or 876 $\frac{1}{4}$ cubic feet per second. We see therefore that the natural channel will not be permanent, and will be very quickly destroyed or changed by this great velocity. We have two methods for procuring stability, viz. diminishing the slope, or widening the bed. The first method will require the course to be lengthened in the proportion of 24² to 3988², or nearly of 36 to 100. The expence of this would be enormous. The second method will require the hydraulic mean depth to be increased nearly in the same proportion (because the velocities are nearly as $\frac{\sqrt{d}}{\sqrt{s}}$). This will evidently be much less cost-

ly, and, even to procure convenient room for the navigation, must be preferred.

We must now observe, that the great velocity, of which we are afraid, obtains only during the winter floods. If therefore we reduce this to 24 inches, it must happen that the autumnal freshes, loaded with sand and mud, will certainly deposit a part of it, and choak up our channel below the flood-gates. We must therefore select a mean velocity somewhat exceeding the regimen, that it may carry off these depositions. We shall take 27 inches, which will produce this effect on the loose mud without endangering our channel in any remarkable degree.

Therefore we have, by the theorem for uniform motion, $V = 27, = \frac{297(\sqrt{d} - 0,1)}{\sqrt{s} - 1, \sqrt{s} + 1,6} - 0,3(\sqrt{s} - 0,1)$.

Calculating the divisor of this formula, we find it = 55,884. Hence $\sqrt{d} - 0,1 = \frac{27 \text{ inch.}}{55,884} = 0,3$

5,3843, and therefore $d = 30,11$. Having thus determined the hydraulic mean depth, we find the area S of the section by dividing the discharge 1514169 by the velocity 27. This gives us 56080,368. Then we get the breadth B by the formula formerly given, $B = \sqrt{\left(\frac{S}{2d}\right)^2 - 2S} + \frac{S}{2d} = 1802,296$ inches, or 150,19 feet, and the depth $b = 31,115$ inches.

With these dimensions of the section we are certain that the channel will be permanent; and the cills of the flood-gates being all fixed agreeable to the primitive slope, we need not fear that it will be changed in the intervals by the action of the current. The gates being all open during the freshes, the bottom will be cleared of all deposited mud.

We must now station the flood-gates along the new channel, at such distances that we may have the depth of water which is proper for the lighters that are to be employed in the navigation. Suppose this to be four feet. We must first of all learn how high the water will be kept in this new channel during the summer droughts. There remained in the primitive channel only 2 feet, and the section in this case had 20 feet 8 inches mean width; and the discharge corresponding to this section and slope of $\frac{1}{50}$ is, by the theorem of uniform motion, 130,849 cubic inches per second. To find

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Station of
the flood-
gates, &c.

Practical Inferences. find the depth of water in the new channel corresponding to this discharge, and the same slope, we must take the method of approximation formerly exemplified, remembering that the discharge D is 130849, and the breadth B is 1760,8 at the bottom (the slant sides being $\frac{4}{3}$). These data will produce a depth of water = $6\frac{1}{2}$ inches. To obtain four feet therefore behind any of the flood-gates, we must have a swell of $41\frac{1}{2}$ inches produced by the gate below.

We must now determine the width of passage which must be given at the gates. This will regulate the thickness of the sheet of water which flows over them when shut; and this, with the height of the gate, fixes the swell at the gate. The extent of this swell, and the elevation of every point of its curved surface above the new surface of the river, requires a combination of the height of swell at the flood-gate, with the primitive slope and the new velocity. These being computed, the stations of the gates may be assigned, which will secure four feet of water behind each in summer. We need not give these computations, having already exemplified them all with relation to another river.

This example not only illustrates the method of proceeding, so as to be ensured of success, but also gives us a precise instance of what must be done in a case which cannot but frequently occur. We see what a prodigious excavation is necessary, in order to obtain permanency. We have been obliged to enlarge the primitive bed to about thrice its former size, so that the excavation is at least two-thirds of what the other method required. The expence, however, will still be vastly inferior to the other, both from the nature of the work and the quantity of ground occupied. At all events, the expence is enormous, and what could never be repaid by the navigation, except in a very rich and populous country.

There is another circumstance to be attended to.—The navigation of this river by sluices must be very desultory, unless they are extremely numerous, and of small heights. The natural surface of the swell being concave upwards, the additions made by its different parts to the primitive height of the river decrease rapidly as they approach to the place A (fig. 20), where the swell terminates; and three gates, each of which raises the water one foot when placed at the proper distance from each other, will raise the water much more than two gates at twice this distance, each raising the water two feet. Moreover, when the elevation produced by a flood-gate is considerable, exceeding a very few inches, the fall and current produced by the opening of the gate is such, that no boat can possibly pass up the river, and it runs imminent risk of being overfet and sunk, in the attempt to go down the stream. This renders the navigation desultory. A number of lighters collect themselves at the gates, and wait their opening. They pass through as soon as the current becomes moderate. This would not, perhaps, be very hurtful in a regulated navigation, if they could then proceed on their voyage. But the boats bound up the river must stay on the upper side of the gate which they have just now passed, because the channel is now too shallow for them to proceed. Those bound down the river can only go to the next gate, unless it has been opened at a time nicely adjusted to the opening of the one above it. The passage

downwards *may*, in many cases, be continued, by very intelligent and attentive lockmen, but the passage up *must* be exceedingly tedious. Nay, we may say, that *while* the passage downwards is continuous, it is but in a very few cases that the passage upward is practicable. If we add to these inconveniences the great danger of passage during the freshes, while all the gates are open, and the immense and unavoidable accumulations of ice, on occasion even of slight frosts, we may see that this method of procuring an inland navigation is amazingly expensive, desultory, tedious, and hazardous. It did not therefore merit, on its own account, the attention we have bestowed on it. But the discussion was absolutely necessary, in order to show what must be done in order to obtain effect and permanency, and thus to prevent us from engaging in a project which, to a person not duly and confidently informed, is so feasible and promising. Many professional engineers are ready, and with honest intentions, to undertake such tasks; and by avoiding this immense expence, and contenting themselves with a much narrower channel, they succeed, (witness the old navigation of the river Mersey). But the work has no duration; and, not having been found very serviceable, its cessation is not matter of much regret. The work is not much spoken of during its continuance. It is soon forgotten, as well as its failure, and engineers are found ready to engage for such another.

It was not a very refined thought to change this imperfect mode for another free from most of its inconveniences. A boat was brought up the river, through one of these gates, only by raising the waters of the inferior reach, and depressing those of the upper: and it could not escape observation, that when the gates were far asunder, a vast body of water must be discharged before this could be done, and that it would be a great improvement to double each gate, with a very small distance between. Thus a very small quantity of water would fill the interval to the desired height, and allow the boat to come through; and this thought was the more obvious, from a similar practice having preceded it, *viz.* that of navigating a small river by means of double bars, the lowest of which lay flat in the bottom of the river, but could be raised up on hinges. We have mentioned this already; and it appears to have been an old practice, being mentioned by Stevinus in his valuable work on sluices, published about the beginning of the last century; yet no trace of this method is to be found of much older dates. It occurred, however, accidentally, pretty often in the flat countries of Holland and Flanders, which being the seat of frequent wars, almost every town and village was fortified with wet ditches, connected with the adjoining rivers. Stevinus mentions particularly the works of Condé, as having been long employed, with great ingenuity, for rendering navigable a very long stretch of the Scheldt. The boats were received into the lower part of the fosse, which was separated from the rest by a stone batardeau, serving to keep up the waters in the rest of the fosse about eight feet. In this was a sluice and another dam, by which the boats could be taken into the upper fosse, which communicated with a remote part of the Scheldt by a long canal. This appears to be one of the earliest locks.

In the first attempt to introduce this improvement in the

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Introduc-
tion of
locks.

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the navigation of rivers already kept up by weirs, which gave a partial and interrupted navigation, it was usual to avoid the great expence of the second dam and gate, by making the lock altogether detached from the river, within land, and having its basin parallel to the river, and communicating by one end with the river above the weir, and by the other end with the river below the weir, and having a flood-gate at each end.— This was a most ingenious thought; and it was a prodigious improvement, free from all the inconveniences of currents, ice, &c. &c. It was called a *Schluffel*, or lock, with considerable propriety; and this was the origin of the word *sluice*, and of our application of its translation *lock*. This practice being once introduced, it was not long before engineers found that a complete separation of the navigation from the bed of the river was not only the most perfect method for obtaining a sure, easy, and uninterrupted navigation, but that it was in general the most economical in its first construction, and subject to no risk of deterioration by the action of the current, which was here entirely removed. Locked canals, therefore, have almost entirely supplanted all attempts to improve the natural beds of rivers; and this is hardly ever attempted except in the flat countries, where they can hardly be said to differ from horizontal canals. We therefore close with these observations this article, and reserve what is yet to be said on the construction of canals and locks for the article *Water-Works*.

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Concluding
observations
to the
reader.

WE beg leave, however, to detain the reader for a few moments. He cannot but have observed our anxiety to render this dissertation worthy of his notice, by making it practically useful. We have on every occasion appealed, from all theoretical deductions, however specious and well supported, to fact and observation of those spontaneous phenomena of nature which are continually passing in review before us in the motion of running waters. Resting in this manner our whole doctrines on experiment, on the observation of what really happens, and what happens in a way which we cannot or do not fully explain, these spontaneous operations of nature came insensibly to acquire a particular value in our imagination. It has also happened in the course of our reflections on these subjects, that these phenomena have frequently presented themselves to our view in groups, not less remarkable for the extent and the importance of their consequences than for the simplicity, and frequently the seeming insignificance, nay frivolity, of the means employed. Our fancy has therefore been sometimes warmed with the view of a something; an

Ens agitans molem, et magno se corpore miscens.

This has sometimes made us express ourselves in a way that is susceptible of misinterpretation, and may even lead into a mistake of our meaning.

We therefore find ourselves obliged to declare, that by the term *NATURE*, which we have so frequently used *con amore*, we do not mean that indescribable idol which the self-conceit and vanity of our neighbours in France have set up of late, and ostentatiously stand on tiptoe to worship. This *ens rationis*, this creature of the imagination, has long been the object of cool contemplation in the closet of the philosopher, and has shared his attention with many other play-things of his ever-working fancy. But she has now become the ob-

ject of a sincere and fond idolatry, being held forth by her zealous high-priests to the refined vanity of man as a sort of mirror, in which he may behold his own cherished features, and admire a beauty of his own composition, painted with the most delicate glow of humanity, and decked out with every ornament with which the courtly fancies of a Voltaire, a Diderot, a Mirabeau, could contrive, to smooth over or to hide all traces of created imperfection. We leave this idol to the worship of her intoxicated and unfortunate votaries. The solemn farce in the church of Notre Dame at Paris was an adoration every way worthy of the Divinity; and our horror in reading the description of the ceremonial was not without some allay of pleasure, when we saw among her most active priests an artist, whom we had seen a few years before the *machiniste de l'opera* at St Petersburg, and grand-master of the lodge *des Mouffes*. We hope to be forgiven the pun, when we say that the ancient fabric which was that day profaned by the *abomination of desolation*, was then in reality the *temple de Notre Dame*. Mr Brignonzi was, by his profession, a fit successor in the priesthood to those *sages de la France* (such was the appellation that they gave each other), whom we have just now named; and his *Tours de Theatre*, for which we have frequently admired his talents, were a very proper accompaniment to the finesse and ruse of these *soi-disant* philosophers, who, under the mask of the most refined humanity, habitually practised arts of dishonesty which would have ruined the character of the meanest pedlar. No one will think that we express ourselves too strongly who reflects on the many infamous tricks played by Voltaire to his booksellers. No one will think the charge too harsh, when he learns that Diderot, after having pretended to the possession of an immense library, and sold it to the empress of Russia for an enormous sum, had to ransack the warehouses of the booksellers of Paris and throughout all Germany, in order to fill his shelves. As for Mirabeau, he surpasses eulogy.

Most assiduous were those apostles in spreading this fanaticism, of which they enjoyed the courtly profits: and we imagine that the employment was as agreeable as it was lucrative; for we cannot suppose that Le Kain had more enjoyment, when fascinating his Parisian audience in the character of Voltaire's Mahomet, than its author felt in the side-box, when grinning to himself, and conscious what a sordid and envious wretch he was, he found himself crowned by the first actresses, and worshipped by the audience as the apostle of philanthropy and universal benevolence.

Such was the worship, such were the priests, of this Gallic idol; and, like their predecessors the Druids, they have made human sacrifices a customary oblation at the shrine. We wonder at these things, and are surprised that any thing which can even be nicknamed *philosophy* can produce such effects. But the task of this apostleship was as easy as it was agreeable. It was not the work of a day; it was the completion of a studied corruption of principles, which is now above a century old. We may say that it began under the clever but infamous Dubois; who from being the valet de chambre of an infirm bishop, became cardinal, and sovereign of the Gallic church, and almost of the state. When objected to by the bigotted Louis XIV. (on a presentation for preferment) as a Jansenist, "*Oh qui non,*" said the duke of Orleans, "*Oh, Sire, qui non, il n'est qu'athée.*"

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qu'athée." He was at the utmost pains to bring into the court every man of eminent talents in gay literature, and of licentious principles in religion and morals, whom he employed in corrupting the minds of the young courtiers, and giving them favourable impressions of the indulgence which they might expect from him when he should have the sole direction of affairs. This system was most assiduously pursued during that most licentious and dissolute administration of the regent Orleans, who was himself a specimen of elegant sensuality not to be matched in the annals of the world. Long before the present day, all thinking men in France saw the mummery of the church, and groaned under its oppression; and having no other notions of religion but what they were accustomed to from their cradle, no wonder that they discarded the principle along with those detestable accessories. The nation, therefore, being greedy of flattery, buoyed up by a self-conceit, in which even the ancient Greeks have not surpassed them, and having been thus studiously corrupted, and long immersed in a luxurious and refined sensuality, of which we in this nation have not yet acquired an adequate idea, was fully prepared for feeling all the effects of this fanaticism of NATURALISM.

But this idolatry we abhor. It shocks our reason; and, although it may at first seem to flatter our thoughtless vanity, it really debases our nature, by taking from us our intellectual kindred to the mind of perfect wisdom. Who would not feel pleasure in being the relation of a Bacon, of a Newton, or would thank the man who detected the false pedigree? It puts an end to our fond hopes, that the day will come when we shall surpass in understanding, in worth, and in felicity, the wisest, the best, and the most fortunate of our species.

We cannot but lament the appearances, however faint, of this fanaticism among ourselves. We cannot but observe, that some of the hired directors of public opinion in matters of taste and science have of late showed a wonderful tenderness for the bold and licentious opinions in religion, morals, and politics, which are daily pouring in upon us from the presses of Paris. Perhaps they may be incited to this conduct by the success of their brother journalists in that profligate metropolis; and may hope to be one day, like them, the directors of the public councils and the sovereigns of the nation. We trust, however, that the better part of the reflecting natives of Britain will not allow themselves to be sneered out of their highest boast and their sweetest comforts; namely, that they are not the chance fragments of a fatal chaos, but the beautiful productions

of a wonderful Artist, and the darling objects of his care: and we assure ourselves that ten thousands of our countrymen are ready to rally under the banners of true religion and sound philosophy, and to follow the steps of a Clarke, a Butler, a Newton, and a Boyle, who so eminently distinguished themselves in the cause of Nature's God.

By NATURE, then, we mean that admirable system of general laws, by which the adored Author and Governor of the universe has thought fit to connect the various parts of this wonderful and goodly frame of things, and to regulate all their operations.

We are not afraid of continually appealing to the laws of nature; and as we have already observed in the article PHILOSOPHY, we consider these general laws as the most magnificent displays of Infinite Wisdom, and the contemplation of them as the most cheering employment of our understandings.

*Ignis est illis vigor et celestis origo
Seminibus.*

At the same time we despise the cold-hearted philosopher who stops short here, and is satisfied (perhaps inwardly pleased) that he has completely accounted for every thing by the laws of unchanging nature; and we suspect that this philosopher would analyse with the same frigid ingenuity, and explain by irresistible *sophy*, the tender attachment of her whose breast he sucked, and who by many anxious and sleepless nights preserved alive the pining infant. But let us rather listen to the words of him who was the most sagacious observer and the most faithful interpreter of nature's laws, our illustrious countryman Sir Isaac Newton. He says,

"Elegantissima hæc rerum compages non nisi consilio et dominio entis sapientissimi et potentissimi oriri potuit. Omnia, simili constructa consilio, suberunt unius dominio. Hic omnia regit, non ut *anima mundi*, sed ut universorum dominus. Propter dominium suum dominus deus, *παντοκράτωρ* nuncupatur. Deus ad servientes respicit, et *deitas* est dominatio dei, non in corpus proprium, uti sentiunt quibus deus est natura seu anima mundi, sed in servos. Deus summus est ens eternum, infinitum, absolute perfectum. Ens utcumque perfectum, at sine dominio, non est dominus deus.

"Hunc cognoscimus, solummodo per proprietates ejus et attributa. Attribuuntur ut ex phenomenis dignoscuntur. Phenomena sunt sapientissimæ et optimæ rerum structuræ, atque causæ finales.—Hunc admiramur ob perfectiones; hunc veneramur et colimus ob dominium" (B).

Ri-

(B) Our readers will probably be pleased with the following list of authors who have treated professedly of the motions of rivers: Guglielmini *De Fluviiis et Castellis Aquarum—Danubius Illustratus*; Grandi *De Castellis*; Zendrini *De Motu Aquarum*; Frisius *de Fluviiis*; Lecchi *Idrostatica i Idraulica*; Michelotti *Spercinze Idrauliche*; Belidor's *Architeſture Hydraulique*; Bossut *Hydrodynamique*; Buat *Hydraulique*; Silberſchlag *Theorie des Fleuves*; *Lettres de M. L'Epinaſſe au P. Frisi touchant ſa Theorie des Fleuves*; *Tableau des principales Rivières du Monde, par Genetté*; *Stevens ſur les Ecluſes*; *Traité des Ecluſes, par Boulard, qui a remporté le Prix de l'Acad. de Lyons*; *Bleiswyck Diſſertatio de Aggeribus*; *Bossut et Viallet ſur la Conſtruction des Digueſ*; *Stevin Hydroſtica*; *Tielman van der Horſt Theatrum Machinarum Univerſale*; *De la Lande ſur les Canaux de Navigation*; *Racolta di Autori chi Trattano del Moto dell' Acque*, 3 tom. 4to, Firenze 1723.—This moſt valuable collection contains the writings of Archimedes, Albizi, Galileo, Caſtelli, Michelini, Borelli, Montanari, Viviani, Caſſini, Guglielmini, Grandi, Manfredi, Picard, and Narduci; and an account of the numberleſs works which have been carried on in the embankment of the Po.

River
||
Road.

RIVER-Water. This is generally much softer and better accommodated to economical purposes than spring-water. For though rivers proceed originally from springs, yet, by their rapid motion, and by being exposed during a long course to the influence of the sun and air, the earthy and metallic salts which they contain are decomposed, the acid flies off, and the terrestrial parts precipitate to the bottom. Rivers are also rendered softer by the vast quantity of rain-water, which, passing along the surface of the earth, is conveyed into their channels. But all rivers carry with them a great deal of mud and other impurities; and, when they flow near large and populous towns, they become impregnated with a number of heterogeneous substances, in which state the water is certainly unfit for the purposes of life; yet, by remaining for some time at rest, all the feculencies subside, and the water becomes sufficiently pure and potable.

RIVERS (Earl). See WODEVILLE.

RIVINIA, in botany: A genus of the monogynia order, belonging to the tetrandria class of plants.—The perianth is four-leaved, coloured, and permanent, the leaflet oblong-egged and obtuse; there is no corolla, unless the calyx be considered as such. There are four or eight filaments, shorter than the calyx, approaching by pairs, permanent; the anthers are small. The germ is large and roundish; the style very short; the stigma simple and obtuse. The berry is globular, sitting on the green reflected calyx, one-celled with an incurved point. There is one seed, lensform and rugged. This plant is called *Solonoides* by Tournefort, and *Piercea* by Miller. It grows naturally in most of the islands of the West Indies. The juice of the berries of the plant will stain paper and linen of a bright red colour, and many experiments made with it to colour flowers have succeeded extremely well in the following manner: the juice of the berries was pressed out, and mixed with common water, putting it into a phial, shaking it well together for some time, till the water was thoroughly tinged; then the flowers, which were white and just fully blown, were cut off, and their stalks placed into the phial; and in one night the flowers have been finely variegated with red; the flowers on which the experiments were made were the tuberoses, and the double white narcissus.

RIVULET, a diminutive of river. See RIVER.

ROACH, in ichthyology. See CYPRINUS.

ROAD, an open way, or public passage, forming a communication between one place and another.

Of all the people in the world the Romans took the most pains in forming roads; and the labour and expences they were at in rendering them spacious, firm, straight, and smooth, are incredible. They usually strengthened the ground by ramming it, laying it with flints, pebbles, or sands, and sometimes with a lining of masonry, rubbish, bricks, &c. bound together with mortar. In some places in the Lioinois, F. Menestrier observes, that he has found huge clusters of flints cemented with lime, reaching 10 or 12 feet deep, and making a mass as hard and compact as marble; and which, after resisting the injuries of time for 1600 years, is still scarce penetrable by all the force of hammers, mattocks, &c. and yet the flints it consists of are not bigger than eggs. The most noble of the Roman roads was the Via Appia, which was carried to such a

vast length, that Procopius reckons it five days journey to the end of it, and Leipsius computes it at 350 miles: it is 12 feet broad, and made of square free-stone generally a foot and a half on each side; and though this has lasted for above 1800 years, yet in many places it is for several miles together as entire as when it was first made.

The ancient roads are distinguished into military roads, double roads, subterraneous roads, &c. The military roads were grand roads, formed by the Romans for marching their armies into the provinces of the empire; the principal of these Roman roads in England are Watling-street, Ikenild-street, Foss-way, and Erminage-street. Double roads among the Romans, were roads for carriages, with two pavements, the one for those going one way, and the other for those returning the other: these were separated from each other by a causeway raised in the middle, paved with bricks, for the convenience of foot passengers; with borders and mounting stones from space to space, and military columns to mark the distance. Subterraneous roads are those dug through a rock, and left vaulted; as that of Puzzuoli near Naples, which is near half a league long, and is 15 feet broad and as many high.

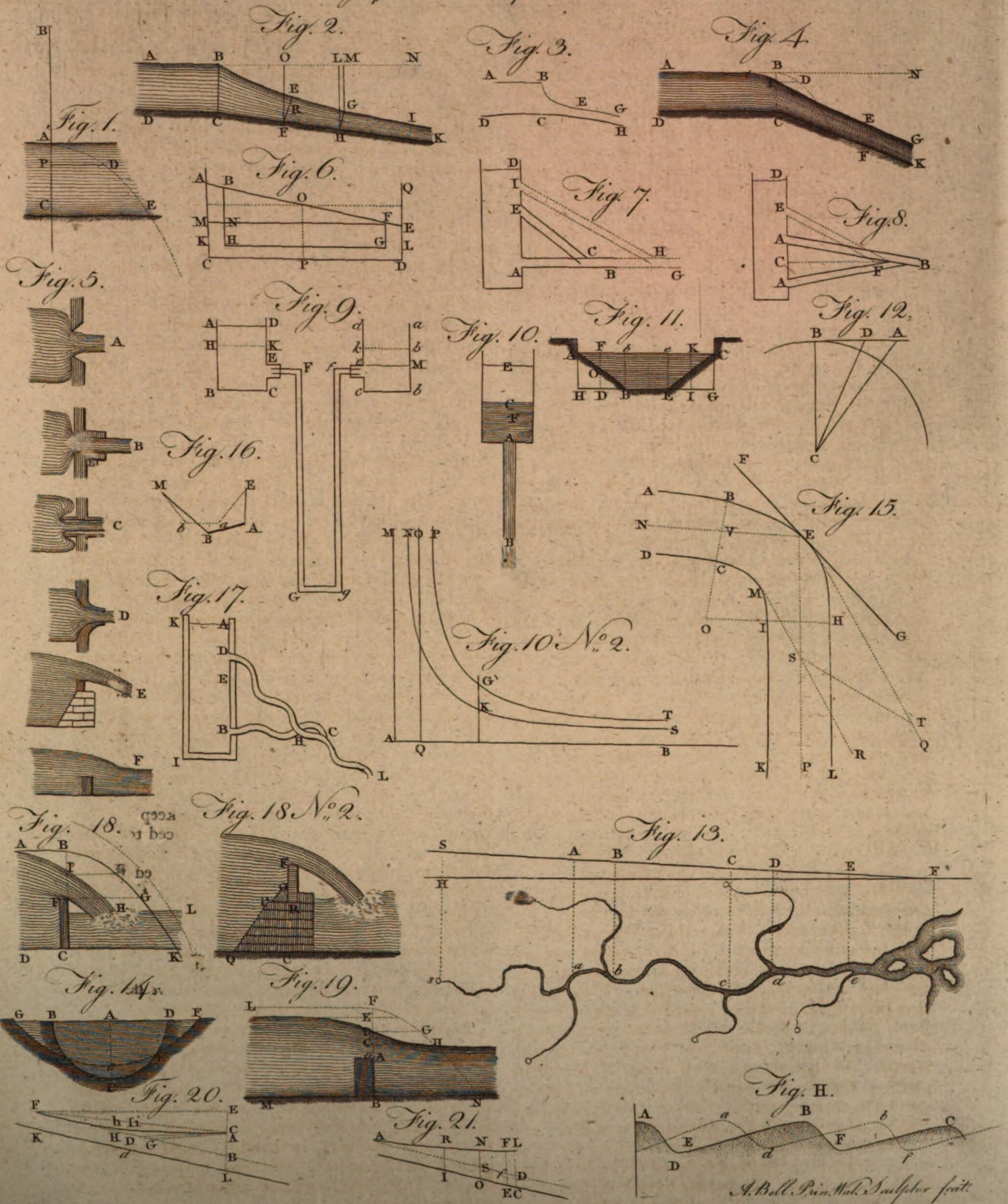
The first law enacted respecting highways and roads in England was in the year 1285; when the lords of the soil were enjoined to enlarge those ways where bushes, woods, or ditches be, in order to prevent robberies. The next law was made by Edward III. in the year 1346; when a commission was granted by the king to lay a toll on all sorts of carriages passing from the hospital of St Giles in the fields to the bar of the Old Temple, and also through another highway called *Portpool* (now Gray's Inn Lane) joined to the before-named highway; which roads were become almost impassable. Little further relating to this subject occurs, till the reign of Henry VIII. when the parishes were entrusted with the care of the roads, and surveyors were annually elected to take care of them. But the increase of luxury and commerce introduced such a number of heavy carriages for the conveyance of goods, and lighter ones for the convenience and ease of travelling, that parish aid was found insufficient to keep the best frequented roads in repair. This introduced toll-gates or turnpikes; that something might be paid towards their support by every individual who enjoyed the benefit of these improvements, by passing over the roads.

Speaking of roads, the Abbé Raynal justly remarks. "Let us travel over all the countries of the earth, and wherever we shall find no facility of trading from a city to a town, and from a village to a hamlet, we may pronounce the people to be barbarians; and we shall only be deceived respecting the degree of barbarism."

ROAD, in navigation, a bay, or place of anchorage, at some distance from the shore, whither ships or vessels occasionally repair to receive intelligence, orders, or necessary supplies; or to wait for a fair wind, &c. The excellence of a road consists chiefly in its being protected from the reigning winds and the swell of the sea; in having a good anchoring-ground, and being at a competent distance from the shore. Those which are not sufficiently inclosed are termed *open roads*.

ROAN, in the manege. A roan horse is one of a bay,

Road,
Roan.



Roanoak
||
Robbery.

bay, sorrel, or black colour, with grey or white spots interspersed very thick. When this party-coloured coat is accompanied with a black head and black extremities, he is called a *roan horse with a black-a-moor's head*: and if the same mixture is predominant upon a deep sorrel, he is called *claret-roan*.

ROANOAK, an island of North America, near the coast of North Carolina. Here the English first attempted to settle in 1585, but were obliged to leave it for want of provisions. E. Long. 75. o. N. Lat. 35. 40.

ROANOAK, a river of North America, which rises in Virginia, runs through Carolina, and at length falls into the sea, where it forms a long narrow bay called *Albemarle sound*.

ROASTING, in metallurgic operations, signifies the dissipation of the volatile parts of an ore by heat. See METALLURGY, *passim*.

ROB, in pharmacy, the juices of fruits purified and inspissated till it is of the consistence of honey.

ROBBERY, the *rapina* of the civilians, is the felonious and forcible taking, from the person of another, of goods or money to any value, by violence or putting him in fear. 1. There must be a taking, otherwise it is no robbery. A mere attempt to rob was indeed held to be felony so late as Henry IVth's time; but afterwards it was taken to be only a misdemeanour, and punishable with fine and imprisonment; till the statute 7 Geo. II. c. 21. which makes it a felony (transportable for seven years) unlawfully and maliciously to assault another, with any offensive weapon or instrument;—or by menaces, or by other forcible or violent manner, to demand any money or goods;—with a felonious intent to rob. If the thief, having once taken a purse, returns it, still it is a robbery: and so it is whether the taking be strictly from the person of another, or in his presence only; as where a robber by menaces and violence puts a man in fear, and drives away his sheep or his cattle before his face. 2. It is immaterial of what value the thing taken is: a penny, as well as a pound thus forcibly extorted, makes a robbery. 3. Lastly, the taking must be by force, or a previous putting in fear; which makes the violation of the person more atrocious than privately stealing. For, according to the maxim of the civil law, "*qui vi rapuit, fur improbius esse videtur*." This previous violence, or putting in fear, is the criterion that distinguishes robbery from other larcenies. For if one privately steals sixpence from the person of another, and afterwards keeps it by putting him in fear, this is no robbery, for the fear is subsequent: neither is it capital as privately stealing, being under the value of twelve-pence. Not that it is indeed necessary, though usual, to lay in the indictment that the robbery was committed by *putting in fear*: it is sufficient, if laid to be done by *violence*. And when it is laid to be done by putting in fear, this does not imply any great degree of terror or affright in the party robbed: it is enough that so much force or threatening, by word or gesture, be used, as might create an apprehension of danger, or induce a man to part with his property without or against his consent. Thus, if a man be knocked down without previous warning, and stripped of his property while senseless, though strictly he cannot be said to be *put in fear*, yet this is undoubtedly a robbery. Or, if a per-

son with a sword drawn begs an alms, and I give it him through mistrust and apprehension of violence, this is a felonious robbery. So if, under a pretence of sale, a man forcibly extorts money from another, neither shall this subterfuge avail him. But it is doubted, whether the forcing a higler, or other chapman, to sell his wares, and giving him the full value of them, amounts to so heinous a crime as robbery.

This species of LARCENY is debarred of the benefit of clergy by statute 23 Hen. VIII. c. 1. and other subsequent statutes; not indeed in general, but only when committed in a dwelling-house, or in or near the king's highway. A robbery therefore in a distant field, or footpath, was not punished with death; but was open to the benefit of clergy, till the statute 3 & 4 W. and M. c. 9. which takes away clergy from both principals and accessories before the fact, in robbery, wheresoever committed. See LAW, N^o clxxxvi. 30.

ROBERT BRUCE, king of Scotland, in 1306; a renowned general, and the deliverer of his country from a state of vassalage to the English. See SCOTLAND.

ROBERT, king of France, surnamed the Wise and the Pious, came to the crown in 996, after the death of Hugh Capet his father. He was crowned at Orleans, the place of his nativity, and afterwards at Rheims, after the imprisonment of Charles of Lorraine. He married Bertha his cousin, daughter of Conrad king of Burgundy; but the marriage was declared null by Gregory V.; and the king, if we can give credit to cardinal Peter Damien, was excommunicated. This anathema made such a noise in France, that all the king's courtiers, and even his very domestics, went away from him. Only two continued with him; who were so deeply impressed with a sense of horror at whatever the king touched, that they purified it with fire; this scruple they carried so far, as to the very plates on which he was served with his meat, and the vessels out of which he drank. The same cardinal reports, that as a punishment for this pretended incest, the queen was delivered of a monster, which had the head and neck of a duck. He adds, that Robert was so struck with astonishment at this species of prodigy, that he lived apart from the queen. He contracted a second marriage with Constance, daughter of William count of Arles and Provence; but the arrogant disposition of this princess would have totally overturned the kingdom, and thrown it into confusion, had not the wisdom of the king prevented her from intermeddling with the affairs of the state. He carefully concealed from her whatever acts of liberality he showed to any of his domestics. "Take care (said he to them) that the queen don't perceive it."—Henry duke of Burgundy, brother of Hugh Capet, dying in 1002, without lawful issue, left his dukedom to his nephew the king of France. Robert invested his second son Henry with this dukedom, who afterwards coming to the crown, resigned it in favour of Robert his cadet. This duke Robert was chief of the first royal branch of the dukes of Burgundy, who flourished till 1361. This dukedom was then re-united to the crown by king John, who gave it to his fourth son Philip the Bold, chief of the second house of Burgundy, which was terminated in the person of Charles the Rash, who was slain in 1477. King Robert was so much esteemed for his wisdom and prudence, that

Robert.

Robert. he was offered the empire and kingdom of Italy, which, however, he declined to accept. Hugh, called the *Great*, whom he had had by Constance, being dead, he caused his second son Henry I. to be crowned at Rheims. He died at Melun, July 20. 1031, at the age of 60. Robert was, according to the knowledge of the times, a wise prince. Helgand, friar of Fleury, relates, in his life of him, that, to prevent his subjects from falling into the crime of perjury, and incurring the penalties which followed thereon, he made them swear upon a shrine from which the relics had been previously removed, as if intention did not constitute perjury! and long after similar reasoning was adopted. Robert built a great number of churches, and procured a restitution to the clergy of the tithes and wealth which the lay-lords had made themselves masters of. The depredations were such, that the laity possessed the ecclesiastical treasures by hereditary titles; they divided them among their children; they even gave benefices as a dowry with their daughters, or left them to their sons as lawful inheritance. Although Robert was pious, and although he respected the clergy, yet it was evident that he opposed the bishops with a firmness and resolution of which, for many ages, they had had no examples. Lutheric archbishop of Sens had introduced into his diocese the custom of proving by the eucharist persons accused as guilty of any crime. The king wrote to him in the following strong terms: "I swear (says he) by the faith I owe to God, that if you do not put a stop to the gross abuse complained of, you shall be deprived of your priesthood." The prelate was forced to comply. He punished, in 1022, the Manichéens, canons of Orleans, by burning them at the stake. There are, however, recorded of him some less severe actions, which it is right to mention. A dangerous conspiracy against his person and government having been discovered, and the authors taken into custody, he seized the moment when their judges had met to sentence them to death, to cause an elegant repast to be served up to them. Next day they were admitted to the eucharist. Then Robert told them, that he gave them their pardon, "because none of those can die whom Jesus Christ came to receive at his table." One day when he was at prayers in the chapel, he perceived a thief, who had cut off the half of the fringe of his mantle, proceeding to take the remainder; "Friend (says he with a pleasant countenance), be content with what you have already taken, the rest will very well serve some other." Robert cultivated, and was a patronizer of the sciences. There are several hymns wrote by him, which still continue to be sung in the church. His reign was happy and tranquil. According to some authors, he instituted the order of the Star, commonly attributed to king John.

ROBERT of France, second son of Louis VIII. and brother to St Louis, who erected in his favour Artois into a royal peerage in the year 1237. It was during this time that the unlucky difference between pope Gregory IX. and the emperor Frederic II. took place. Gregory offered to St Louis the empire for Robert; but the French noblesse, having met to deliberate on this proposal, were of opinion that he ought to reject it. He gave the pope for answer: "That Count Robert esteemed himself sufficiently honoured by being the brother of a king, who surpassed in dignity, in

strength, in wealth, and in birth, all other monarchs in the world." Robert accompanied St Louis into Egypt, and fought with more bravery than prudence at the battle of Maffoure, on the 9th of February 1250. In his pursuit of the cowards through a certain small village, he was killed by stones, sticks, and other things which they threw at him from the windows. He was an intrepid prince, but too passionate, dogmatical, and quarrellsome.

ROBERT II. *Count of Artois*, son of the preceding, surnamed the Good and the Noble, was at the expedition into Africa in 1270. He drove the rebels from Navarre in 1276. He brought a very powerful assistance to Charles I. king of Naples, of which kingdom he was regent during the captivity of Charles II. He defeated the Aragonians in Sicily in 1289, the English near Bayonne in 1296, and the Flemish at Furnes in 1298. But having in 1302 imprudently attempted to force these last, when encamped near Courtray, he received no less than 30 wounds; and in that expedition lost both his honour and his life. He was a brave, but passionate and fierce man, and good at nothing but pugilistic encounters. Mahaud his daughter inherited the dukedom of Artois, and gave herself in marriage to Otho duke of Burgundy, by whom she had two daughters, Jane wife of Philip the Long, and Blanche wife of Charles the Fair. In the mean time Philip, son of Robert II. had a son,

ROBERT III. who disputed the dukedom of Artois with Mahaud his aunt; but he lost his suit by two sentences given in against him in 1302 and 1318. He wished to revive the process in 1329, under Philip of Valois, by means of pretended new titles, which were found to be false. Robert was condemned the third time, and banished the kingdom in 1331. Having found an asylum with Edward III. king of England, he undertook to declare him king of France; which proved the cause of those long and cruel wars which distressed that kingdom. Robert was wounded at the siege of Vannes in 1342, and died of his wound in England. John, son to Robert, and count of Eu, was taken prisoner at the battle of Poitiers in 1356, and terminated his career in 1387. His son Philip II. high constable of France, carried on war in Africa and Hungary, and died in 1397, being a prisoner of the Turks. He had a son named *Charles*, who died in 1472, leaving no issue.

ROBERT of Anjou, surnamed the Wise, third son of Charles the Lame, succeeded his father in the kingdom of Naples in 1309, by the protection of the popes, and the will of the people, to the exclusion of Charobert son of his eldest brother. He aided the Roman pontiffs against the emperor Henry VII. and, after the death of that prince, was nominated in 1313 vicar of the empire in Italy, in temporal matters, unless a new emperor was elected. This title was given him by Clement V. in virtue of a right which he pretended to have to govern the empire during an interregnum. Robert reigned with glory 33 years, eight months, and died on the 19th of January 1343, aged 64. "This prince (says M. De Montigni) had not those qualities which constitute heroes, but he had those which make good kings. He was religious, affable, generous, kind, wise, prudent, and a zealous promoter of justice." He was called the *Solomon* of his age. He loved the poor,

Robert.

and caused a ticket to be placed upon his palace, to give notice when he meant to distribute from the throne. He had no other passion but a very great love for learning. He used to say, that he would rather renounce his crown than his study. His court soon became the sanctuary of the sciences, which he encouraged equally by his example and his bounty. This prince was versed in theology, jurisprudence, philosophy, mathematics, and medicine. Boccaccio says, "that since the days of Solomon we have not seen so wise a prince upon the throne." For a great part of his life he had no taste for poetry; he even despised it, as, in his opinion, unworthy of a man of learning. A conversation which he had with Petrarch, however, undeceived him; he retained this poet at his court, and attempted himself to write some poems, which are still extant. He was forced to engage a little in war, for which he possessed no great talents: alluding to which, may be seen on his tomb a wolf and a lamb drinking out of the same vessel. Philip of Valois refrained from giving battle in 1339, by the repeated advice which this prince gave him, who was a great friend to France, both from inclination and interest. He detested quarrels among Christian princes, and had studied the science of astrology, not so much to know the course of the stars, as to learn by this chimerical science the hidden things of futurity. He believed that he read in the grand book of heaven a very great misfortune which would befall France if Philip hazarded a battle against the English.

ROBERT the First, called the Magnificent, duke of Normandy, second son of Richard II. succeeded in 1208 his brother Richard III. whom it is reported he poisoned. He had early in his reign to suppress frequent rebellions of several of the great vassals. He re-established in his estates Baudouin IV. count of Flanders, who had been unjustly stripped of his possessions by his own son. He forced Canute king of Denmark, who was also king of England, to divide his possessions with his cousins Alfred and Edward. In the year 1035, he undertook barefooted a journey to the Holy Land; on his return from which he died, being poisoned at Nice in Bithynia, leaving as his successor William his natural son, afterwards king of England, whom he had caused before his departure to be publicly acknowledged in an assembly of the states of Normandy.

ROBERT, or *Rupert*, surnamed the Short and the Mild, elector Palatine, son of Robert the Niggardly, was born in 1352, and elected emperor of Germany in 1400, after the deposition of the cruel Wenceslas. In order to gain the affection of the Germans, he wished to restore Milan to the empire, which Wenceslas had taken from it; but his attempts in this respect were unsuccessful. His attachment to the anti-pope Gregory XII. entirely alienated the affections of the German princes. To such a degree were they incensed against him, that they entered into a conspiracy to cut him off; but his death, which happened on the 18th of May 1410, being then 58 years old, put a stop to their machinations. Robert began to settle the sovereignty of the German princes. The emperors had formerly retained in their own hands the power of life and death, within the territories of a great many of the nobles; but he yielded them this right by his letters patent.—The chief fault imputed to this prince was an excess of

lenity. But, if we consider the plots which he had to detect, the conspiracies which he had to frustrate, the secret and powerful enemies he had to deal with; if we inquire also into the commotions which the wicked administration of Wenceslas had excited, the irruptions and devastations of plunderers and highway robbers, which the nobles countenanced, and the distressed situation in which he found Germany, we must without hesitation conclude, that his lenity indicated his prudence, in restoring by slow degrees the empire to its original tranquillity. Robert had his virtues, he loved his subjects, and governed them with wisdom. Possessed of much political knowledge for the age in which he lived, he wanted nothing but talents for war to make him an accomplished prince. He was twice married. The name and rank of his first wife is unknown; he had by her a son, who died before him. His second wife was Elizabeth, daughter of Frederic burgrave of Nuremberg, by whom he had five sons and three daughters. The three daughters were, Margaret married to Charles duke of Lorraine; Agnes to Adolphus duke of Cleves; Elizabeth to Frederic duke of Austria. His sons were, Louis the first of the electoral branch, which became extinct in 1559; John father of Christopher king of Denmark; Frederic who died without issue; Otho count of Sinsheim; lastly, Stephen, from whom descended the elector, and the other counts palatine of the Rhine, who are extant at this day.

ROBERT (of Bavaria), prince palatine of the Rhine, and duke of Cumberland, the son of Frederic, elector palatine, by Elizabeth, daughter of James I. king of England, distinguished himself by his valour as a general and admiral; first in the Dutch, and then in the English service. He was unsuccessful in the cause of his uncle Charles I. against the parliament forces; but under Charles II. he defeated the Dutch fleet, and was made lord high admiral of England in 1673. This prince was a lover of the sciences, and particularly skilful in chemistry. He died in 1682.

ROBERTSON (Dr William), one of the most celebrated historians of his age, was one of those great characters whose private life, flowing in an even and unvaried stream, can afford no important information to the biographer, although his writings will be read to the latest posterity with undiminished pleasure. He was born at the manse of Borthwick in the year 1721. His father was, at the time of his death, one of the ministers of the Old Grey Friars church in Edinburgh, which the Doctor came afterwards to supply. In 1743 he was licenced preacher, and placed in the parish of Gladsmuir in 1744; whence, in 1758, he was translated to Lady Yester's parish in Edinburgh. In 1761, on the death of Principal Goldie, he was elected principal of the university of Edinburgh, and appointed one of the ministers of the Old Grey Friars church. About this period he received the degree of Doctor of Divinity, and was appointed historiographer to his majesty for Scotland, and one of his majesty's chaplains for that kingdom.

We find it not easy to ascertain at what period were first unfolded the great and singular talents which destined Dr Robertson to be one of the first writers that rescued this island from the reproach of not having any good historians. We are, however, assured, that before the publication of any of his literary performances,

Robert,
Robertson.

Robertson. even from his first appearance in public life, his abilities had begun to attract the notice of observing men; and to his more intimate friends he discovered marks of such high-minded ambition, as, seconded by those abilities, could not have failed to carry him to the first honours of his profession, in whatever sphere he had been placed, and whatever opposition he might have had to combat.

The first theatre that offered for the display of his talents, was the General Assembly of the Church of Scotland. It is the annual meetings of this court that produce to view men who would otherwise remain in the deepest obscurity. There the humble pastor, whose lot has been cast in the remotest corner of the Highland wilds, feels himself, for a time, on a footing of equality with the first citizen in the kingdom: he can there dispute with him the prize of eloquence, the most flattering distinction to a liberal mind; a distinction which is naturally sought after with the greater eagerness in that assembly, as the simple establishment of the church of Scotland has rendered it the only pre-eminence to which the greatest part of its members can ever hope to attain.

From the moment Dr Robertson first appeared in this assembly, he became the object of universal attention and applause. His speeches were marked with the same manly and persuasive eloquence that distinguishes his historical compositions; and it was observed by all, that while his young rivals in oratory contented themselves with opening a cause, or delivering a studied harangue, he showed equal ability to start objections, to answer, or to reply; and that even his most unpremeditated effusions were not unadorned with those harmonious and seemingly measured periods, which have been so much admired in his works of labour and reflection. He soon came to be considered as the ablest supporter of the cause he chose to espouse, and was now the unrivalled leader of one of the great parties which have long divided the church of which he was a member.

When we reflect upon this circumstance, and consider how much mankind are the same in every society, we shall be the less surprised to find, in the literary works of Dr Robertson, an acquaintance with the human heart, and a knowledge of the world, which we look for in vain in other historians. The man who has spent his life in the difficult task of conducting the deliberations of a popular assembly, in regulating the passions, the interests, the prejudices, of a numerous faction, has advantages over the pedant, or mere man of letters, which no ability, no study, no second-hand information, can ever compensate.

The first work which extended the Doctor's reputation beyond the walls of the general assembly, was a sermon preached at Edinburgh before the society for propagating Christian knowledge, and afterwards published; the subject of which was, 'The state of the world at the appearance of Jesus Christ.' The ingenuity with which a number of detached circumstances are there collected, and shown to tend to one single point, may perhaps rival the art which is so much admired in the bishop of Meaux's celebrated *Universal History*.

This sermon did great honour to the author; and it is probably to the reputation he gained by it, that we

ought to attribute the unanimity with which he was called to be one of the ministers of Edinburgh—an event which happened not long after, viz. in the year 1758. In 1759, he published, in two volumes quarto, 'The History of Scotland, during the reigns of Queen Mary and of King James VI. till his Accession to the Crown of England, with a Review of the Scots History previous to that period.' This work in its structure is one of the most complete of all modern histories. It is not a dry jejune narrative of events, destitute of ornament; nor is it a mere frothy relation, all glow and colouring. The historian discovers a sufficient store of imagination to engage the reader's attention, with a due proportion of judgment to check the exuberance of fancy. The arrangement of his work is admirable, and his descriptions are animated. His style is copious, nervous, and correct. He has displayed consummate skill in rendering such passages of our history as are familiar to our recollection agreeable and entertaining. He has embellished old materials with all the elegance of modern dress. He has very judiciously avoided too circumstantial a detail of trite facts. His narratives are succinct and spirited; his reflections copious, frequent, and generally pertinent. His sentiments respecting the guilt of Mary have indeed been warmly controverted by Messrs Tytler, Stuart, and Whitaker; and the general opinion now seems to be, that their victory is complete. That victory, however, on the part of Whitaker, is sullied by the acrimony with which he writes. Dr Robertson was no rancorous or malignant enemy of the unfortunate queen. While relating, what he doubtless believed, he makes every possible allowance for Mary from the circumstances in which she was placed; and his history will be read with pleasure by candid men of all parties as long as the language in which it is composed shall continue to be understood.

In 1769, Dr Robertson published, in three volumes quarto, *The History of the Reign of the Emperor Charles V. with a View of the Progress of Society in Europe, from the Subversion of the Roman Empire to the beginning of the 16th century.*—The vast and general importance of the period which this history comprises, together with the reputation which our historian had deservedly acquired, co-operated to raise such high expectations in the public, that no work perhaps was ever more impatiently wished for, or perused with greater avidity. The first volume (which is a preliminary one, containing the progress of society in Europe, as mentioned in the title) is a very valuable part of the work; for it serves not only as a key to the pages that follow, but may be considered as a general introduction to the study of history in that period in which the several powers of Europe were formed into one great political system, in which each took a station, wherein it has since remained (till within a very few years at least) with less alterations than could have been expected, after the shocks occasioned by so many internal revolutions, and so many foreign wars. Of the history itself, it may be sufficient to observe, that it is justly ranked among the capital pieces of historical excellence. There is an elegance of expression, a depth of discernment, and a correctness of judgment, which do honour to the historian. The characters are inimitably penned. They are not contrasted by a studied antithesis, but by an opposition which results from a very

Robertson. very acute and penetrating insight into the real merits of each character, fairly deduced from the several circumstances of his conduct exemplified in the history. For this work the Doctor got L. 4500 Sterling.

In 1779, Dr Robertson published *The History of America*, in two volumes quarto. This celebrated work may be considered with great propriety as a sequel to the preceding history. From the close of the 15th century we date the most splendid era in the annals of modern times. Discoveries were then made, the influence of which descended to posterity; and events happened that gave a new direction to the spirit of nations.

To the inhabitants of Europe, America was in every respect a new world. There the face of the earth changed its appearance. The plants and trees and animals were strange; and nature seemed no longer the same. A continent opened that appeared to have recently come from the hands of the Creator, and which showed lakes, rivers, and mountains, on a grander scale, and the vegetable kingdom in greater magnificence, than in the other quarters of the globe; but the animal tribes in a state of degradation, few in number, degenerated in kind, imperfect, and unfinished. The human species in the earliest stage of its progress, vast and numerous nations in the rudest form of the savage state which philosophers have contemplated, and two great empires in the lowest degree of civilization which any records have transmitted to our review, presented to the philosophic eye at this period the most fruitful subject of speculation that was to be found in the annals of history.

The discovery of the New World, moreover, was not only a curious spectacle to the philosopher, but, by the change which it effected, an interesting spectacle to the human race. When Columbus set sail for unknown lands, he little expected that he was to make a revolution in the system of human affairs, and to form the destiny of Europe for ages to come. The importance and celebrity therefore of the subject had attracted the attention of philosophers and historians. Views and sketches of the new world had been given by able writers, and splendid portions of the American story had been adorned with all the beauties of eloquence. But, prior to the appearance of Dr Robertson's history, no author had bestowed the mature and profound investigation which such a subject required, or had finished, upon a regular plan, that complete narration and perfect whole which it is the province of the historian to transmit to posterity. And as the subject upon which our author entered was grand, his execution was masterly. The character of his former works was immediately discerned in it. They had been read with uncommon admiration. When the *History of Scotland* was first published, and the author altogether unknown, Lord Chesterfield pronounced it to be equal in eloquence and beauty to the productions of Livy, the purest and most classical of all the Roman historians. His literary reputation was not confined to his own country: the testimony of Europe was soon added to the voice of Britain. It may be mentioned, indeed, as the characteristic quality of our author's manner, that he possessed in no common degree that supported elevation which is suitable to compositions of the higher class; and, in his *History of America*, he displayed that hap-

py union of strength and grace which becomes the majesty of the historic muse. In the fourth book of his first volume, which contains a description of America when first discovered, and a philosophical inquiry into the manners and policy of its ancient inhabitants, he displays, moreover, so much patient investigation and sound philosophy, abounds in such beautiful or interesting description, and exhibits such variety and copiousness of elegant writing, that future times will probably refer to it as that part of his works which gives the best idea of his genius, and is the most finished of all his productions.

In 1787 appeared a translation of the Abbé Clavigero's *History of Mexico*; in which work the author threw out various reflections, tending in several instances to impeach the credit of Dr Robertson's *History of America*. This attack induced our learned historian to revise his work, and to inquire into the truth of the charges brought against it by the historian of New Spain: and this he appears to have done with a becoming attention to the importance of the facts that are controverted, and to the common interests of truth. The result he published in 1788, under the title of *Additions and Corrections to the former Editions of Dr Robertson's History of America*.—In many of the disputed passages, he fully answered the Abbé Clavigero, and vindicated himself: in others he candidly submitted to correction, and thus gave additional value to his own work.

The literary labours of Dr Robertson appear to have been terminated in 1791 by the publication of *An Historical Disquisition concerning the Knowledge which the Ancients had of India, and the Progress of Trade with that Country prior to the Discovery of the Passage to it by the Cape of Good Hope*; with an Appendix, containing Observations on the Civil Policy, the Laws, and Judicial Proceedings, the Arts, the Sciences, and Religious Institutions of the Indians.—The perusal of Major Rennell's Memoir, for illustrating his map of Hindostan, suggested to Dr Robertson the design of examining more fully than he had done, in his *History of America*, into the knowledge which the ancients had of India, and of considering what is certain, what is obscure, and what is fabulous, in their accounts of that remote country. Of his various performances, this is not that of which the design is the most extensive, or the execution the most elaborate; but in this historical disquisition we perceive the same patient assiduity in collecting his materials, the same discernment in arranging them, the same perspicuity of narrative, and the same power of illustration, which so eminently distinguish his other writings, and which have long rendered them the delight of the British reader at home and an honour to British literature abroad.

A truly useful life Dr Robertson closed on the 11th of June 1793, at Grange-House, near Edinburgh, after a lingering illness, which he endured with exemplary fortitude and resignation. It may be truly observed of him, that no man lived more respected, or died more sincerely lamented. Indefatigable in his literary researches, and possessing from nature a sound and vigorous understanding, he acquired a store of useful knowledge, which afforded ample scope for the exertion of his extraordinary abilities, and raised him to the most distinguished eminence in the republic of letters. As

Robigus
Robinia.

a minister of the gospel, he was a faithful pastor, and justly merited the esteem and veneration of his flock. In a word, he may be pronounced to be one of the most perfect characters of the age; and his name will be a lasting honour to the island that gave him birth. His conversation was cheerful, entertaining, and instructive; his manners affable, pleasing, and endearing.

Dr Robertson left three sons and two daughters. The eldest son is procurator for the church of Scotland, and an advocate. The other two are officers in the army; and one of them distinguished himself under Lord Cornwallis in such a manner as to command the warmest praise from that illustrious general.

ROBIGUS AND ROBIGO, a Roman god and goddess, who joined in the preservation of corn from blight. Their festival was kept on the 25th of April.

ROBIN HOOD. See HOOD.

ROBIN Red-Breast. See MOTACILLA.

ROBINIA, FALSE ACACIA, in botany: A genus of the decandria order, belonging to the diadelphia class of plants; and in the natural method ranking under the 32d order, *Papilionaceæ*. The calyx is quadrid; the legumen gibbous and elongated. There are nine species. The most remarkable are the *caragnana* and *ferox*, the leaves of the former of which are conjugated, and composed of a number of small folioles, of an oval figure, and ranged by pairs on one common stock. The flowers are leguminous, and are clustered on a filament. Every flower consists of a small bell-shaped petal, cut into four segments at the edge, the upper part being rather the widest. The keel is small, open, and rounded. The wings are large, oval, and a little raised. Within are 10 stamina united at the base, curved towards the top, and rounded at the summit. In the midst of a sheath, formed by the filaments of the stamina, the pistil is perceivable, consisting of an oval germen, terminated by a kind of button. This germen becomes afterwards an oblong flattish curved pod, containing four or five seeds, of a size and shape irregular and unequal; yet in both respects somewhat resembling a lentil.

This tree grows naturally in the severe climates of Northern Asia, in a sandy soil mixed with black light earth. It is particularly found on the banks of great rivers, as the Oby, Jenisia, &c. It is very rarely met with in the inhabited parts of the country, because cattle are very fond of its leaves, and hogs of its roots; and it is so hardy, that the severest winters do not affect it. Gmelin found it in the neighbourhood of Tobolsk, buried under 15 feet of snow and ice, yet had it not suffered the least damage. Its culture consists in being planted or sowed in a lightish sandy soil, which must on no account have been lately manured. It thrives best near a river, or on the edge of a brook or spring; but presently dies if planted in a marshy spot, where the water stagnates. If it is planted on a rich soil, well tilled, it will grow to the height of 20 feet, and in a very few years will be as big as a common birch tree.

In a very bad soil this tree degenerates, and becomes a mere shrub: the leaves grow hard, and their fine bright green colour is changed to a dull deep green. The Tongusian Tartars, and the inhabitants of the northern parts of Siberia, are very fond of the fruit of this tree, it being almost the only sort of pulse they eat. M. Strahlenberg, author of a well-esteemed description

of Siberia, assures us that this fruit is tolerably pleasant food, and very nourishing. These pease are first infused in boiling water, to take off a certain acrid taste they have, and are afterwards dressed like common pease or Windsor beans; and being ground into meal, pretty good cakes are made of them. The leaves and tender shoots of this tree make excellent fodder for several sorts of cattle. The roots, being sweet and succulent, are very well adapted to fattening hogs; and the fruit is greedily eaten by all sorts of poultry. After several experiments somewhat similar to the methods used with anil and indigo, a fine blue colour was procured from its leaves. The smaller kind of this tree seems still better adapted to answer this purpose. The striking elegance of its foliage, joined to the pleasing yellow colour of its beautiful flowers, should, one would imagine, bring it into request for forming nosegays, or for speedily making an elegant hedge.

Besides the qualities above recited, it possesses the uncommon advantage of growing exceedingly quick, and of being easily transplanted. There are large plantations of it now in Sweden, Norway, Lapland, and Iceland. Lianæus assures us, that, after the *Pinus fol. quinis*, erroneously called the *cedar tree of Siberia*, this tree, of all that are to be found in Siberia, is most worthy of cultivation.

2. The *robinia ferox* is a beautiful hardy shrub, and, on account of its robust strong prickles, might be introduced into this country as a hedge plant, with much propriety. It resists the severest cold of the climate of St Petersburg, and perfects its seed in the garden of the empress there. It rises to the height of six or eight feet; does not send out suckers from the root, nor ramble so much as to be with difficulty kept within bounds. Its flowers are yellow, and the general colour of the plant a light pleasing green. A figure of it is given in the *Flora Rossica* by Dr Pallas, who found it in the southern districts, and sent the seeds to St Petersburg, where it has prospered in a situation where few plants can be made to live.

ROBINS (Benjamin), a most ingenious mathematician, was born at Bath in 1707. His parents were Quakers, and of low condition, consequently neither able nor willing to have him much instructed in human learning. Nevertheless his own propensity to science procured him a recommendation to Dr Pemberton at London; by whose assistance, while he attained the sublimer parts of mathematical knowledge, he commenced teacher of the mathematics. But the business of teaching, which required confinement, not suiting his active disposition, he gradually declined it, and engaged in business that required more exercise. Hence he tried many laborious experiments in gunnery, from the persuasion that the resistance of the air has a much greater influence on swift projectiles than is generally imagined. Hence also he was led to consider the mechanic arts that depend on mathematical principles; as the construction of mills, the building of bridges, the draining of fens, the rendering of rivers navigable, and the making of harbours. Among other arts, fortification much engaged his attention; and he met with opportunities of perfecting himself by viewing the principal strong places of Flanders, in some tours he made abroad with persons of distinction.

Upon his return from one of these excursions, he found

Robinia,
Robinia.

Robins. found the learned amused with Dr Berkeley's work, intitled *The Analyst*, in which an attempt was made to explode the method of fluxions. Mr Robins was therefore advised to clear up this affair by giving a distinct account of Sir Isaac Newton's doctrines, in such a manner as to obviate all the objections that had been made without naming them. Accordingly he published, in 1735, A Discourse concerning the Nature and Certainty of Sir Isaac Newton's Method of Fluxions: and some exceptions being made to his manner of defending Sir Isaac Newton, he afterwards wrote two or three additional discourses. In 1738 he defended the same great philosopher against an objection contained in a note at the end of a Latin piece, called *Matho, sive Cosmotheoria puerilis*; and the following year printed Remarks on M. Euler's Treatise of Motion, on Dr Smith's System of Optics, and on Dr Jurin's Discourse of distinct and indistinct Vision annexed to Dr Smith's work. In the meanwhile, Mr Robins did not solely confine himself to mathematical subjects: for in 1739 he published three pamphlets on political affairs, without his name; when two of them, relating to the convention and negociations with Spain, were so universally esteemed, as to occasion his being employed in a very honourable post; for on a committee being appointed to examine into the past conduct of Sir Robert Walpole, he was chosen their secretary.

In 1742, Mr Robins published a small treatise, intitled *New Principles of Gunnery*, containing the result of many experiments; when a Discourse being published in the Philosophical Transactions, in order to invalidate some of his opinions, he thought proper, in an account he gave of his book in the same Transactions, to take notice of those experiments; in consequence of which, several of his Dissertations on the Resistance of the Air were read, and the experiments exhibited before the Royal Society, for which he was presented by that honourable body with a gold medal.

In 1748 appeared Lord Anson's Voyage round the World, which, though Mr Walter's name is in the title, has been generally thought to be the work of Mr Robins. Mr Walter, chaplain on board the Centurion, had brought it down to his departure from Macao for England, when he proposed to print the work by subscription. It was, however, it is said, thought proper, that an able judge should review and correct it, and Mr Robins was appointed; when, upon examination, it was resolved that the whole should be written by Mr Robins, and that what Mr Walter had done should only serve as materials. Hence the introduction entire, and many dissertations in the body of the work, it is said, were composed by him, without receiving the least assistance from Mr Walter's manuscript, which chiefly related to the wind and the weather, the currents, courses, bearings, distances, the qualities of the ground on which they anchored, and such particulars as generally fill up a sailor's account. No production of this kind ever met with a more favourable reception; four large impressions were sold within a twelvemonth; and it has been translated into most of the languages of Europe. The fifth edition, printed at London in 1749, was revised and corrected by Mr Robins himself. It appears, however, from the corrigenda and addenda to the 1st volume of the Biographia Britannica, printed in the beginning of the fourth volume of that work, that

Mr Robins was only consulted with respect to the disposition of the drawings, and that he had left England before the book was printed. Whether this be the fact, as it is asserted to be by the widow of Mr Walter, it is not for us to determine.

It is certain, however, that Mr Robins acquired the fame, and he was soon after desired to compose an apology for the unfortunate affair at Prestonpans in Scotland, which was prefixed as a preface to The Report of the Proceedings of the Board of General Officers on their Examination into the Conduct of Lieutenant-General Sir John Cope; and this preface was esteemed a masterpiece in its kind. He afterwards, through the interest of Lord Anson, contributed to the improvements made in the Royal Observatory at Greenwich. Having thus established his reputation, he was offered the choice of two considerable employments; either to go to Paris as one of the commissaries for adjusting the limits of Arcadia, or to be engineer-general to the East India company. He chose the latter, and arrived in the East Indies in 1750; but the climate not agreeing with his constitution, he died there the year following.

ROBINSON (the most Rev. Sir Richard), archbishop of Armagh and Lord Rokeby, was immediately descended from the Robinsons of Rokeby in the North Riding of the county of York, and was born in 1709. He was educated at Westminster school, from whence he was elected to Christ-Church, Oxford, in 1726. After continuing his studies there the usual time, Doctor Blackburne, archbishop of York, appointed him his chaplain, and collated him first to the rectory of Elton, in the East Riding of Yorkshire, and next to the prebend of Grindal, in the cathedral of York. In 1751 he attended the Duke of Dorset, lord-lieutenant of Ireland, to that kingdom, as his first chaplain, and the same year was promoted to the bishopric of Killala. A family connection with the Earl of Holderness, who was secretary of state that year, with the Earl of Sandwich and other noblemen related to him, opened the fairest prospects of attaining to the first dignity in the Irish church. Accordingly in 1759 he was translated to the united sees of Leighlin and Ferns, and in 1761 to Kildare. The Duke of Northumberland being appointed to the lieutenancy of Ireland in 1765, he was advanced to the primacy of Armagh, made lord-almoner, and vice-chancellor of the university of Dublin. When Lord Harcourt was lord-lieutenant of Ireland in 1777, the king was pleased by privy-seal at St James's, February 6th, and by patent at Dublin the 26th of the same month, to create him Baron Rokeby of Armagh, with remainder to Matthew Robinson of West Layton, Esq; and in 1783 he was appointed prelate to the most illustrious order of St Patrick. On the death of the Duke of Rutland lord-lieutenant of Ireland in 1787, he was nominated one of the lords-justices of that kingdom. Sir William Robinson, his brother, dying in 1785, the primate succeeded to the title of baronet, and is the survivor in the direct male line of the Robinsons of Rokeby, being the 8th in descent from William of Kendal. His grace died at Clifton near Bristol in the end of October 1794.

No primate ever sat in the see of Armagh who watched more carefully over the interest of the church of Ireland, as the statute-book evinces. The act of the

Robins,
Robinson.

Robinson. 11th and 12th of his present majesty, which secures to bishops and ecclesiastical persons repayment by their successors of expenditures in purchasing glebes and houses, or building new houses, originated from this excellent man, and must ever endear his name to the clergy. The other acts for repairing churches, and facilitating the recovery of ecclesiastical dues, were among the many happy exertions of the primate.

But it was at Armagh, the ancient seat of the primacy, that he displayed a princely munificence. A very elegant palace, 90 feet by 60, and 40 high, adorns that town; it is light and pleasing, without the addition of wings or lesser parts; which too frequently wanting a sufficient uniformity with the body of the edifice, are unconnected with it in effect, and divide the attention. Large and ample offices are conveniently placed behind a plantation at a small distance. Around the palace is a large lawn, which spreads on every side over the hills, skirted by young plantations, in one of which is a terrace, which commands a most beautiful view of cultivated hill and dale; this view from the palace is much improved by the barracks, the school, and a new church at a distance; all which are so placed as to be exceedingly ornamental to the whole country.

The barracks were erected under the primate's direction, and form a large and handsome edifice. The school is a building of considerable extent, and admirably adapted for the purpose; a more beautiful or better contrived one is nowhere to be seen; there are apartments for a master, a school-room 56 feet by 28, a large dining room and spacious airy dormitories, with every other necessary, and a spacious play-ground walled in; the whole forming a handsome front: and attention being paid to the residence of the master (the salary is 400*l.* a year), the school flourishes, and must prove one of the greatest advantages to the country. This edifice was built entirely at the primate's expence. The church is erected of white stone, and having a tall spire, makes a very agreeable object, in a country where churches and spires do not abound. The primate built three other churches, and made considerable reparations to the cathedral; he was also the means of erecting a public infirmary, contributing amply to it himself: he likewise constructed a public library at his own cost, endowed it, and gave it a large collection of books; the room is 45 feet by 25, and 20 high, with a gallery and apartments for the librarian. The town he ornamented with a market-house and shambles, and was the direct means, by giving leases upon that condition, of almost new-building the whole place. He found it a nest of mud cabins, and he left it a well-built city of stone and slate. These are noble and spirited works, in which the primate expended not less than *L.* 30,000. Had this sum been laid out in improving a paternal estate, even then they would be deserving great praise; but it is not for his posterity but the public good that his grace was so munificent. A medal was struck by the ingenious William Mossop of Dublin, which has on one side the head of the primate, inscribed "Richard Robinson, Baron Rokeby, Lord Primate of all Ireland." And on the reverse, the south front of the observatory at Armagh, erected by his grace, with this admirable motto, "The Heavens declare the glory of God." *MDCCLXXXIX.*

ROBINSON (Robert), a dissenting minister of consi-

derable note, was born on the 8th of October 1735 at Swaffham in Norfolk. His father died when he was young; and his maternal grandfather Robert Wilkin, of Mildenhall, Suffolk, gent. who had ever been dissatisfied with his daughter's marriage, deprived him of his maternal inheritance, cutting him off with half-a-guinea. His uncle, however, who was a substantial farmer, in some measure supplied this loss. He took Mr Robinson home, and placed him under the Rev. Joseph Brett, at Scarning school in Norfolk, with a view to the ministry of the church of England; where he had for one of his school-fellows the lord-chancellor Thurlow. When about the age of 15 or 16, he imbibed the notions of George Whitfield; on which account he was discarded by his uncle, and again exposed to poverty and want. He first directed his thoughts towards the ministry in the year 1754, and commenced preacher in the following year at the age of 20; preaching his first sermon to a congregation of poor people at Mildenhall. He continued for a year or two as one of Mr Whitfield's preachers, and during that period he married. In the year 1758, however, he determined to separate from the Methodists; after which he settled at Norwich with a small congregation formed chiefly of his methodistic friends, being at that time an Independent. In the year 1759 he was invited to Cambridge, and for two years preached on trial to a congregation consisting of no more than 34 people, and so poor that they could only raise *L.* 3 : 6 : 0 a quarter for his subsistence. In June 1761 he settled as their pastor, and was ordained in the usual manner; at which time we are told he exercised the office of a barber. In 1774, his congregation had so much increased as to consist of 1000 souls, including children and servants.

In Cambridge Mr Robinson's talents soon attracted notice, and he quickly set up a Sunday evening lecture, which was well attended. His preaching was altogether without notes; a method in which he was peculiarly happy: not by trusting to his memory entirely, nor by working himself up to a degree of warmth and passion, to which the preachers among whom he first appeared commonly owe their ready utterance; but by thoroughly studying and making himself perfectly master of his subject, and a certain faculty of expression which is never at a loss for suitable and proper words. In short, his manner was admirably adapted to enlighten the understanding, and to affect and reform the heart. He had such a plainness of speech, such an easy and apparent method in dividing a discourse, and such a familiar way of reasoning, as discovered an heart filled with the tenderest concern for the meanest of his hearers; and yet there was a decency, propriety, and justness, that the most judicious could not but approve. Several gentlemen of the university, eminent for character and abilities, we are told, were his constant hearers.

The circumstances which lost him his uncle's patronage paved the way for the future events of his life. The incident which made him discard the common sentiments on the subject of baptism, at once marked the turn of his mind, and shows what apparently slight causes frequently determine the lot and usefulness of our lives. He was invited to the baptism of a child; the minister who was to perform the service keeping the company in long expectation of his appearance, some

Robinson. one suggested, that supposing the child were not baptized at all, he saw not how it could affect his happiness. Though the conversation was not pursued, the hint struck Mr Robinson's mind; and he immediately determined to read the New Testament with this particular view, to examine what it said concerning the baptism of infants. He accordingly began with the Gospel of Matthew; and, in succession, perused the historical and epistolary books; in expectation that he should find in every following part what he had not met with in the preceding parts of the sacred volume; namely, passages recommending and urging this rite. But observing, on the whole, a total silence about it, he thought it his duty to relinquish the practice, as without foundation in the rule of our faith; which appeared to him to speak only of the baptism of believers.

This change of his sentiments was more unfavourable than the former alterations in his religious judgment to his worldly views; and having married very early in life from pure affection, he was involved in great difficulties for near 12 years after his settlement in Cambridge; as, in that course of time, his family became numerous, and the support of an aged mother, as well as of a wife and ten children, depended upon him. But unexpected supplies, from quarters of which he was ignorant, frequently relieved his necessities, and confirmed his trust in Providence: yet the situation of his family must, it is easy to conceive, have much affected his mind. For he appears to have possessed great tenderness and sensibility, and to have regarded with peculiar endearment his domestic connections.

It may be reckoned a circumstance worthy of mention, that the sphere of Mr Robinson's ministry was the same in which his great-grandfather Mr Shelly, of Jesus College, and vicar of All-Saints, had, with others, diffused the principles of the Puritans, about the beginning of the last century. The reputation of the Dissenters in the university and neighbourhood had for almost a century been sinking into contempt, when Mr Robinson settled with the baptist church at Stone-Yard. His abilities and assiduity, however, raised their reputation. The place in which his people assembled, which was at first a barn, afterwards a stable and granary, and then a meeting-house, but still a damp, dark, and ruinous place, soon became too small for the audience; and several of the new auditors being men of fortune, they purchased the site, and erected at their own expence a new house in the year 1764.

His labours as a preacher were not limited to the town of Cambridge; but soon after his coming there, he set up several lectures in the adjacent villages. His lectures were either annual or occasional, or stated on fixed days. The usual time was half an hour after six in the evening; and sometimes at five in the morning; and now and then in the summer at two in the afternoon, for the sake of those who came from a distance.

He died on the 9th of June 1790, at the house of William Ruffel, Esq; of Showell green near Birmingham. He had laboured under an alarming disorder for some time before; but on the Sunday preceding his death he preached a charity sermon. On Monday he was seized with a fit; on Tuesday he recovered and went to bed tolerably well, and was found dead next morning.

The abilities of Mr Robinson were very considerable, as appears from his numerous works; and he possessed

the quality of expressing his thoughts in an easy and a forcible manner. But he appears to have been of an unsteady temper, and, in our opinion, acquires but little credit either from the frequency with which he changed his religious creed (for we have reason to believe he died a Socinian), or from the foolish and undeserved acrimony with which he treated the Church of England. His Plan of Lectures on the Principles of Non-conformity, for the Instruction of Catechumens, is a piece of the most unjust and illiberal abuse that we have ever seen, and would have disgraced the most high flying Puritan of the last century.

Mr Robinson's largest work, the History of Baptism and of the Baptists, was published since his death, and is written in the same style and with the same confidence as his other works. Yet, as we have heard it remarked by a learned and liberal professor of Theology in the church which he opposed, it is not a little remarkable that there is in it no argument or fact against infant baptism which was not answered by Dr Wall nearly 100 years ago, of whose arguments Mr Robinson however takes no notice.

ROBORANTS, in pharmacy, medicines which strengthen the parts, and give new vigour to the constitution.

ROCHEFORT, a handsome and considerable town of France in the territory of Annis. It was constructed by Louis XIV. and is built in the midst of marshes expressly drained for that purpose; and time evinced the utility of the project, for as a port it soon became as necessary and important to the crown of France as Brest or Toulon. It has a department of the marine, and has large magazines of naval stores. There is also one of the finest halls of arms in the kingdom, and a great many workmen employed in making them; there are also forges for anchors, and work-houses for ship-carpenters, who are employed in every thing that relates to the fitting out of ships that come within the compass of their province. They likewise cast great guns here; and have artists, whose employment is sculpture and painting. There are also stocks for building men of war, rope-walks, magazines of provisions and powder, a manufactory of sail-cloth, an hospital for sailors, and proper places to clean the ships. Add to these, the houses of the intendant, the square of the capuchins, and the superb structure which contains lodgings for 300 marine guards, where they are taught the business and exercises belonging to seamen and officers who go on board the men of war.

Beside the usual number of workmen which were employed at Rochefort during the monarchy, which amounted to about 900, there were about 600 galley slaves, occupied in the most painful and laborious branches of service. The town is situated on the river Charente, about five leagues from its mouth, and was fortified by Louis XIV. at the time he constructed it; but its situation is at so considerable a distance from the sea, as to render it sufficiently secure from any attack, and they have therefore closed up the battlements, and neglected the fortifications. The town is laid out with great beauty and elegance. The streets are all very broad and straight, extending through the whole place from side to side; but the buildings do not correspond with them in this respect, as they are mostly low and irregular. W. Long. 0. 54. N. Lat. 46. 3.

R r

ROCHE-

Robots,
Rochefort.

Rochefou-
cault.

ROCHEFOUCAULT (Francis earl of), descended of an illustrious family, next in dignity to that of the sovereigns, was chamberlain to king Charles VIII. and Louis XII. His character at court was admired as obliging, generous, upright, and sincere. In 1494 he stood godfather to Francis I. who, when he came to the throne, continued to pay great respect to that spiritual relation. He made him his chamberlain in ordinary, and erected, in 1515, the barony of Rochefoucault into an earldom; and, in his writ of erection, observes, that he did this in memory of the great, honourable, highly useful, and commendable services which the said Francis had done to his predecessors, to the crown of France, and to himself. The earl of Rochefoucault died in 1517, leaving behind him an illustrious memory, and a character universally respected. Since his time all the eldest sons of that family have taken the name of Francis.

ROCHEFOUCAULT (Francis duke de la), prince of Marillac, governor of Poitou, was born in 1603. —He was the son of Francis, the first duke of Rochefoucault, and was distinguished equally by his courage and his wit. These shining qualities endeared him to all the nobility at court, who were ambitious of decorating themselves at once with the laurels of Mars and of Apollo. He wrote two excellent works; the one a book of Maxims, which M. de Voltaire says has contributed more than any thing else to form the taste of the French nation; and the other, Memoirs of the Regency of Queen Anne of Austria. It was partly at the instigation of the beautiful duchess de Longueville, to whom he had been long attached, that the duke de Rochefoucault engaged in the civil wars, in which he signalized himself particularly at the battle of St Antoine. Beholding one day a portrait of this lady, he wrote underneath it these two lines from the tragedy of Alcyonée:

*“ Pour meriter son cœur, pour plaire à ses beaux yeux,
“ J’ai fait la guerre aux rois, je l’aurois fait aux deux.”*

Which may be thus rendered in English:

*“ To gain her heart, and please her sparkling eyes,
“ I’ve war’d with kings, and would have brav’d the skies.”*

It is reported, that after his rupture with Madame Longueville, he parodied the above verses thus:

*“ Pour ce cœur inconstant, qu’enfin je connois mieux,
“ Je fais la guerre aux rois, j’en ai perdu les yeux.”*

After the civil wars were ended, he thought of nothing but enjoying the calm pleasures of friendship and literature. His house became the rendezvous of every person of genius in Paris and Versailles. Racine, Boileau, Savigne, and La Fayette, found in his conversation charms which they sought for in vain elsewhere. He was not, however, with all his elegance and genius, a member of the French Academy. The necessity of making a public speech the day of his reception was the only cause that he did not claim admittance. This nobleman, with all the courage he had displayed upon various critical occasions, and with his superiority of birth and understanding over the common run of men, did not think himself capable of facing an audience, to utter only four lines in public, without being out of countenance. He died at Paris in 1680, aged 68,

leaving behind him a character which has been variously drawn by those who during his life were proud of his friendship. That he was well acquainted with human nature is certain; and his merit in that respect was fully admitted by Swift, who was himself not easily imposed upon by the artificial disguises of the hypocrite.

ROCHELLE, a celebrated city of France, capital of the territory of Aunis, with a very commodious and safe harbour, which, though it does not admit vessels of any considerable burden, is yet well calculated for trade. “ It may be divided (says Mr Wraxal) into three parts; the bason, which is the innermost of these, is only a quarter of a mile in circumference; and at the entrance are two very noble Gothic towers, called the Tower de St Nicholas, and the Tour de la Chaine. They are now in a state of decay, but were anciently designed to protect the town and harbour. Without these towers is the Avant Port, extending more than a league, and bounded by two points of land to the north and south. Beyond all is the road where the largest ships usually anchor, protected from the south-west winds by the islands of Re, Oleron, and Aix.” The celebrated mound erected by Richlieu extends from side to side across the whole harbour, nearly an English mile in length, and when the sea retires is still visible. “ I walked out upon it (says Mr Wraxal) above 300 feet. Its breadth is at this time more than 150 feet, and it widens continually towards the base. No effort of art or power can possibly impress the mind with so vast and sublime an idea of the genius of Richlieu, as does this bulwark against the sea. While I stood upon it, in the middle of the port, between the waves which rolled on either side, and contemplated its extent and strength, I was almost inclined to suppose this astonishing work to be superior to human power, and the production rather of a deity than of a mortal. A small opening of about 200 feet was left by Pompey Targon, the architect who constructed it, to give entrance to vessels, and shut up by chains fixed across it. A tower was likewise erected at each end, no remains of which are now to be seen. Neither the duke of Buckingham, nor the earl of Lindsey, who were successively sent from England to the aid of the besieged by Charles the First, dared to attack this formidable barrier: they retired, and left Rochelle to its fate. In all probability, a thousand years, aided by storms and all the fury of the sea, will make little or no impression on this mound, which is designed to endure as long as the fame of the Cardinal, its author.”

Before the revolution, Rochelle was a bishop’s see, and contained a college of humanities, an academy, a school for medicine, anatomy, and botany, and a mint. It cannot lay claim to any remote antiquity, being merely a little collection of houses on the shore, inhabited by fishermen, when William IX. last count of Poitou, rendered himself master of it in 1139. From this Prince it descended to his only daughter Eleanor, afterwards queen of Henry II. of England; and her charter incorporating the town is still preserved in the registers of the city. In the year 1540, Rochelle was the grand asylum of the Protestants; and the massacre at Paris was soon followed by the siege of Rochelle, which began in November 1572, and was raised in June 1573; but in 1628, after a most obstinate resistance, and a siege of 13 months, it surrendered to the

Rochester. the mercy of Louis XIII. At the beginning of the first siege, the number of inhabitants in the city amounted to 72,000; in the second they diminished to 28,000; and they were, when Mr Wraxal was there, between 17 and 18,000, of which scarce 2000 were Huguenots. The houses of this city are fine, and supported with piazzas, under which persons may walk in all weathers; and the streets in general are as straight as a line. There are several handsome churches, and other structures, besides a remarkable pump in the square of Dauphiny, which throws out the water through several pipes. There are no remains of the old fortifications, except on the side of the harbour, where there are bulwarks and strong towers to defend the entrance. The new fortifications are in the manner of Vauban. Before Canada was ceded to England, and New Orleans to Spain, the trade of Rochelle was very lucrative. It revived about the year 1773, and, beside that to the coast of Guinea and the East Indies, the inhabitants carried on a considerable trade in wines, brandy, salt, paper, linen cloth, and serge. It is seated on the ocean, in W. Long. 1. 11. N. Lat. 46. 10.

ROCHESTER, a city of Kent, in England, is situated on the Medway, seven miles and a half north of Maidstone, and 30 from London. It appears to have been one of the Roman stations, from the bricks in the walls, as well as the Roman coins that have been found about it. It has three parish churches built with stone and flints, besides the cathedral, which is but a mean structure. This little city, which was made a bishop's see by king Ethelbert, anno 604, has met with many misfortunes. In 676, it was sacked by Eldred king of Mercia; in 839 and 885, besieged by the Danes, but rescued by king Alfred. About 100 years after, it was besieged by king Ethelred, and forced to pay L. 100. Anno 999 it was taken and plundered by the Danes. Anno 1088 it was besieged and taken by William Rufus. In king John's time it was taken from the Barons, after three month's siege; and the very next year, viz. 1256, its castle, founded by William the Conqueror, was stormed and taken by several of the Barons, under the French king's son. In the reign of Henry III. it was besieged by Simon Montford, who burnt its then wooden bridge and tower, and spoiled the church and priory, and then marched off. This city has also been several times destroyed by fire, viz. in 1130, on June 3. in 1137, and in 1177; after which it is said to have continued desolate till 1225, when it was repaired, ditched, and walled round. In the Saxon heptarchy there were three mints in Rochester, two for the king and one for the bishop. In 1281, its old wooden bridge was carried off by the ice, in a sudden thaw after a frost which had made the Medway passable on foot. Another was built in the reign of Richard II. but pulled down again, on the rumour of an invasion from France. It was afterwards restored, but so often subject to expensive repairs, by reason of the rapid course of the river under it, as well as the great breadth and depth of it, that in the reign of Edward III. it was resolved to build a new bridge of stone; and the same was begun, and in a manner completed, at the expence of Sir John Cobham and Sir Robert Knolles, Edward III.'s generals, out of the spoils they had taken in France. It has 21 arches. The town is governed by a mayor, recorder, 12 aldermen, 12

common-councilmen, a town-clerk, three serjeants at mace, and a water-bailiff. To its cathedral belong a dean and six prebendaries. Gundulph's tower stands on the north side of the cathedral, and is supposed to have been built by the bishop, as a place of security for the treasures and archives of that church and see. Some suppose it to have been intended for a bell tower, and others for an ecclesiastical prison; but whatever might be its destination, its machicolations, its loop-hole windows, and the thickness of its walls, shows strength and defence were considered as necessary. This tower was 60 feet high, but some part has lately fallen down; the walls are six feet thick, and contain within them an area of 20 feet square: it was divided into five floors or stories of unequal height, and had a communication with the upper part of the church, by means of an arch or bridge, the steps of which are still visible. It is supposed to have been erected after the cathedral was built. For the maintenance of its bridge, certain lands are tied down by parliament, to which it has sent members from the first. The town-house, built in the year 1687, for the courts, assizes, and sessions, and the charity-school, are two of the best public buildings here.—A mathematical school was founded here, and an alms-house for lodging six poor travellers every night, and allowing them 4 d. in the morning when they depart, except persons contagiously diseased, rogues, and proctors. In the summer here are always six or eight lodgers, who are admitted by tickets from the mayor. The Roman Watling-street runs through this town from Shooters-Hill to Dover. The mayor and citizens hold what is called an admiralty-court once a-year for regulating the oyster-fishery in the creeks and branches of the Medway that are within their jurisdiction, and for prosecuting the cable-hangers, as they are called, who dredge and fish for oysters without being free, by having served seven years apprenticeship to a fisherman who is free of the fishery. Every licensed dredger pays 6s. 8d. a-year to the support of the courts, and the fishery is now in a flourishing way. Part of the castle is kept in repair, and is used as a magazine, where a party of soldiers do constant duty. The bridge was repaired in 1744, and pallisadoed with new iron rails. Rochester contains about 700 houses, and 2000 inhabitants. It consists of only one principal street, which is wide, and paved with flints. The houses are generally well built with brick, and inhabited by tradesmen and innkeepers. It has also four narrow streets; but no sort of manufactory is carried on here. Stroud is at the west end of this place, and Chatham at the east. It is 27 miles north-west by west of Canterbury, and 30 south-east by east of London. Long. 0. 36. E. Lat. 51. 23. N.

ROCHESTER (earl of). See **WILMOT**.

ROCK, a large mass or block of hard stone rooted in the ground. See **MOUNTAIN**, **PETRIFICATION**, and **STONE**.

Rock, in ornithology, a species of **VULTURE**.

Rock Basins are cavities or artificial basins of different sizes, from six feet to a few inches diameter, cut in the surface of the rocks for the purpose, as is supposed, of collecting the dew and rain pure as it descended from the heavens, for the use of ablutions and purifications, prescribed in the druidical religion; these, especially the dew, being deemed the purest of all

Rochester;
Rock.

Großer's
England and
Wales.

Rock,
Rocket.

fluids. There are two sorts of these basons, one with lips or communications between the different basons, the other simple cavities. The lips as low as the bottom of the basons, which are horizontal, and communicate with one somewhat lower, so contrived that the contents fell by a gradual descent through a succession of basons either to the ground, or into a vessel set to receive it. The basons without lips might be intended for reservoirs to preserve the rain or dew in its original purity without touching any other vessel, and was perhaps used for the druid to drink, or wash his hands, previous to officiating at any high ceremony, or else to mix with their mistletoe.

Some of these basons are so formed as to receive the head and part of the human body; one of this kind is found on a rock called king Arthur's bed, in the parish of North Hall in Cornwall, where are also others, called by the country people Arthur's troughs, in which they say he used to feed his dogs.

Rock-Crystal, in natural history, otherwise called *spring-crystal*, a name given to the third order of crystals, from their being affixed to a rock or other solid body. See CRYSTAL.

Rock-Salt. See SALT.

Rock-Oil. See PETROLEUM.

Rock-Fish. See GOBIUS.

ROCKET, an artificial fire-work, consisting of a cylindrical case of paper, filled with a composition of certain combustible ingredients; which, being tied to a stick, mounts into the air, and then bursts. See PYROTECHNY.

Theory of the Flight of Sky-ROCKETS. Mariotte takes the rise of rockets to be owing to the impulse or resistance of the air against the flame. Dr Desagulier accounts for it otherwise.

Conceive the rocket to have no vent at the choak, and to be set on fire in the conical bore; the consequence will be, either that the rocket would burst in the weakest place, or, if all its parts were equally strong, and able to sustain the impulse of the flame, the rocket would burn out immovable. Now, as the force of the flame is equable, suppose its action downwards, or that upwards, sufficient to lift 40 pounds. As these forces are equal, but their directions contrary, they will destroy each other's action.

Imagine then the rocket opened at the choak; by this means the action of the flame downwards is taken away, and there remains a force equal to 40 pounds acting upwards, to carry up the rocket, and the stick it is tied to. Accordingly, we find that if the composition of the rocket be very weak, so as not to give an impulse greater than the weight of the rocket and stick, it does not rise at all; or if the composition be slow, so that a small part of it only kindles at first, the rocket will not rise.

The stick serves to keep it perpendicular; for if the rocket should begin to stumble, moving round a point in the choak, as being the common centre of gravity of rocket and stick, there would be so much friction against the air by the stick between the centre and the point, and the point would beat against the air with so much velocity, that the friction of the medium would restore it to its perpendicularity.

When the composition is burnt out, and the impulse upwards is ceased, the common centre of gravity is

brought lower towards the middle of the stick; by which means the velocity of the point of the stick is decreased, and that of the point of the rocket increased; so that the whole will tumble down, with the rocket-end foremost.

All the while the rocket burns, the common centre of gravity is shifting and getting downwards, and still the faster and the lower as the stick is the lighter, so that it sometimes begins to tumble before it be burnt out; but when the stick is a little too heavy, the weight of the rocket bearing a less proportion to that of the stick, the common centre of gravity will not get so low but that the rocket will rise straight, though not so fast.

ROCKET, in botany. See BRASSICA.

ROCKINGHAM, a town in Northamptonshire, in England, 87 miles from London, stands on the river Welland. It has a charity-school, a market on Thursday, and a fair on Sept. 8. for five days. Its forest was reckoned one of the largest and richest of the kingdom, in which William the Conqueror built a castle; it extended, in the time of the ancient Britons, almost from the Welland to the Nen, and was noted formerly for iron-works, great quantities of flags, *i. e.* the refuse of the iron-ore, being met with in the adjacent fields. It extended, according to a survey in 1641, near 14 miles in length, from the west end of Middleton-Woods to the town of Mansford, and five miles in breadth, from Brigstock to the Welland; but is now dismembered into parcels, by the interposition of fields and towns, and is divided into three bailiwicks. In several of its woods a great quantity of charcoal is made of the tops of trees, of which many waggon-loads are sent every year to Peterborough. There is a spacious plain in it called Rockinghamshire, which is a common to the four towns of Cottingham, Rockingham, Corby, and Gretton. King William Rufus called the council here of the great men of the kingdom. W. Long. o. 46. N. Lat. 52. 32.

ROCKING-STONES. See *Rocking-STONES*.

ROCKOMBOLE. See ALLIUM.

ROD, a land measure of 16 feet and a half; the same with perch and pole.

Black Rod. See *USHER of the Black Rod*.

Fishing-Rod, a long taper rod or wand, to which the line is fastened for angling. See *FISHING-Rod*.

RODNEY (George Bridges), Lord Rodney, was born in the year 1718. Of the place of his birth and the rank of his ancestors we have not been able to procure any well authenticated account. His father was a naval officer; and commanding, at the time of his son's birth, the yacht in which the king, attended by the Duke of Chandos, was passing to or from Hanover, he asked and obtained leave to have the honour of calling his infant son *George Bridges*. The royal and noble god-fathers advised Captain Rodney to educate his boy for his own profession, promising, as we have been told, to promote him as rapidly as the merit he should display and the regulations of the navy would permit.

Of young Rodney's early exertions in the service of his country, nothing, however, is known to the writer of this abstract, nor, indeed, any thing of sufficient importance to be inserted in articles so circumscribed as all our biographical sketches must be, till 1751, when we find him, in the rank of a Commodore, sent out to make

Rocket
Rodney.

Rodney.

make accurate discoveries respecting an island which was supposed to lie about 50° N. L. and about 300 leagues W. of England: but he returned without having seen any such island as that which he was appointed to survey. In the war which soon followed this voyage of discovery, he was promoted to the rank of a rear-admiral, and was employed to bombard Havre-de-Grace; which in 1759 and 1760 he considerably damaged, together with some shipping. In 1761 he was sent on an expedition against Martinico, which was reduced in the beginning of the year 1762, and about the same time St Lucia surrendered to Captain Harvey. Both these islands were restored to the French at the peace of 1763.

In reward for his services, he was created a knight of the Bath; but being inattentive, as many seamen are, to the rules of economy, his circumstances became so embarrassed that he was obliged to fly from his country, with very slight hopes of ever being able to return. He was in France when the ill-advised policy of that court made them take a decided part with America against Great Britain; and it is said that some men in power, no strangers to the desperate state of Sir George's affairs, offered him a high command in the French navy, if he would carry arms against his own country. This offer he rejected with becoming indignation. Soon after this gallant behaviour, the Duke de Chartres, afterwards the infamous Orleans, told Sir George that he was to have a command in the fleet which was to be opposed to that under the command of his countryman Mr Keppel; and with an insulting air asked him what he thought would be the consequence of their meeting? "That my countryman will carry your Highness with him to learn English," was the high-spirited reply.—When the divisions, which the mutual recriminations of Admiral Keppel and Sir Hugh Palliser excited in the British navy, made it difficult for the ministry to procure experienced, and at the same time popular, commanders for their fleets, Lord Sandwich wrote to Sir George Bridges Rodney, offering him a principal command; but the difficulty was for the veteran to find money to pay his accounts in France, so that he might be permitted to leave that kingdom. The money, it has been repeatedly affirmed, was advanced to him by the courtiers whose offer he had before indignantly rejected. He arrived, therefore, in England, and was again employed in the service of his country. His first exploit after his appointment was in January 1780, when he took 19 Spanish transports bound to Cadiz from Bilboa, together with a 64 gun ship and 5 frigates, their convoy. On the 16th of the same month he fell in with the Spanish fleet, consisting of 11 sail of the line, under the command of Don Juan de Langara; of which one was blown up during the engagement, five were taken and carried into Gibraltar, among which was the admiral's ship, and the rest were much shattered. In April the same year, he fell in with the French fleet, under the command of Admiral Guichen, at Martinico, whom he obliged to fight, and whom he completely beat; though from the shattered state of his own fleet, and the unwillingness of the enemy to risk another action, he took none of their ships. The successful efforts of our gallant admiral during the year 1780 were generally applauded through the nation. He received the thanks of both Houses of Parliament, and addresses of thanks from

various parts of Great Britain, and the islands to which his victories were more particularly serviceable. In December the same year, he made an attempt, together with General Vaughan, on St Vincent's, but failed. In 1781, he continued his exertions, with much success, in defending the West India islands; and, along with the above named general, he conquered St Eustatius; on which occasion his conduct to the inhabitants has been much, though perhaps unjustly, censured. The island was certainly a nest of contraband traders.

On the 12th of April 1782, he came to a close action with the French fleet under Count de Grasse; during which he sunk one ship and took five, of which the admiral's ship, the *Ville de Paris*, was one. The following year brought peace; but, as a reward for his numerous services, he had a grant of L. 2000 a-year for himself and his two successors. He had long before been created a baronet, was rear-admiral of Great Britain, and at length was justly promoted to the peerage, by the title of Baron Rodney of Stoke, Somersetshire, and made vice-admiral of Great Britain. He was once also governor of Greenwich Hospital.

Lord Rodney had been twice married; first to the sister of the Earl of Northampton, and secondly to the daughter of John Clies, Esq; with whom he did not reside for several years before his death, which happened on the 24th of May 1792. He was succeeded in title and estates by his son George, who married in 1781 Martha, daughter of the Right Hon. Alderman Harley, by whom he has issue.

Of the private life of Lord Rodney we know but little. His attention to the wants of the seamen, and the warrant officers serving under him, indicated that humanity which is always allied to true courage. He has often, from the number of dishes which his rank brought to his table, selected something very plain for himself, and sent the rest to the midshipmen's mess.—His public transactions will transmit his name with honour to posterity; his bravery was unquestionable, and his success has been seldom equalled. It has, indeed, been very generally said, that his skill in naval tactics was not great, and that he was indebted to the superior abilities of Capt. Young and Sir Charles Douglas for the manœuvres by which he was so successful against Langara and De Grasse. But, supposing this to be true, it detracts not from his merit. A weak or foolish commander could not always make choice of the ablest officers for his first captains, nor would such a man be guided by their advice.

Whatever was Lord Rodney's skill in the science of naval war, or however much he may have been beholden to the counsels of others, he certainly possessed himself the distinguished merit of indefatigable exertion; for he never omitted any thing within the compass of his power to bring the enemy to action. He therefore unquestionably deserves the respect and the gratitude of his country. In the year 1783 the House of Assembly in Jamaica voted L. 1000 towards erecting a marble statue to him, as a mark of their gratitude and veneration for his gallant services, so timely and gloriously performed for the salvation of that island in particular, as well as the whole of the British West India islands and trade in general. We have not, however, heard of any such tribute being paid to him in Britain either before or since his death.

Rodney.

Roe
||
Rohan.

ROE, the seed or spawn of fish. That of the male fishes is usually distinguished by the name of *soft roe*, or *milt*; and that of the female, *hard roe*, or *spawn*. So inconceivably numerous are these ovula or small eggs, that M. Petit found 342,144 of them in a carp of 18 inches; but M. Lieuwenhoek found in a carp no more than 211,629. This last gentleman observes, that there are four times this number in a cod; and that a common one contains 9,344,000 eggs.

ROE, in zoology. See **CERVUS**.

ROELLA, in botany: A genus of the monogynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 29th order, *Campanaceæ*. The corolla is funnel-shaped, with its bottom shut up by stamiferous valvules; the stigma is bifid; the capsule bilocular, and cylindrical inferior.

ROGA, in antiquity, a present which the emperors made to the senators, magistrates, and even to the people; and the popes and patriarchs to their clergy. These rogæ were distributed by the emperors on the first day of the year, on their birth-day, or on the *natalis dies* of the cities; and by the popes and patriarchs in passion-week. Roga is also used for the common pay of the soldiers.

ROGATION (**ROGATIO**), in the Roman jurisprudence, a demand made by the consuls or tribunes of the Roman people, when a law was proposed to be passed. *Rogatio* is also used for the decree itself made in consequence of the people's giving their assent to this demand; to distinguish it from a *senatus consultum*, or decree of the senate.

ROGATION-Week, the week immediately succeeding Whitsunday; so called from the three feasts therein, viz. on Monday, Tuesday, and Wednesday.

ROGER DE HOVEDEN, a learned man of the 13th century, was born in Yorkshire, most probably at the town of that name, now called *Howden*, some time in the reign of Henry I. After he had received the first parts of education in his native country, he studied the civil and canon law, which were then become the most fashionable and lucrative branches of learning. He became domestic chaplain to Henry II. who employed him to transact several ecclesiastical affairs; in which he acquitted himself with honour. But his most meritorious work was, his *Annals of England*, from A. D. 731, when Bede's Ecclesiastical History ends, to A. D. 1202. This work, which is one of the most voluminous of our ancient histories, is more valuable for the sincerity with which it is written, and the great variety of facts which it contains, than for the beauty of its style, or the regularity of its arrangement.

ROGUE, in law, an idle sturdy beggar; who by ancient statutes is for the first offence called a *rogue of the first degree*, and punished by whipping, and boring through the gristle of the right ear with a hot iron; and for the second offence, is termed a *rogue of the second degree*, and, if above 18 years of age, ordered to be executed as a felon.

ROHAN (Peter de), Chevalier de Gié, and marshal of France, better known by the name of *Marshal de Gié*, was the son of Louis de Rohan, the first of the name, lord of Guémené and Montauban, and descended of one of the most ancient and most illustrious families of the kingdom. The family of Rohan, before the Revolution, held the rank of prince in France

in consequence of deriving its origin from the first sovereigns of Brittany, and clearly admitted by the dukes of Brittany themselves in the states general of that province held in 1088. The house of Rohan had still another advantage, which was common to it with very few families, even the most distinguished among the princes, namely, that instead of having been aggrandised by the wealth procured from alliances, it had held in itself for seven centuries the largest possessions of any family in the kingdom.

One of the most distinguished branches of this family was Peter, the subject of the present article. Louis XI. rewarded his bravery with the staff of marshal of France in 1475. He was one of the four lords who governed the kingdom during the indisposition of that prince at Chinon in 1484. Two years afterwards he opposed the attacks of the archduke of Austria upon Picardy. He commanded the van-guard at the battle of Fornoue in 1495, and signalized himself much in that engagement. His bravery procured him the countenance and confidence of Louis XII. who appointed him his prime counsellor, and general of the army in Italy; but these advantages he lost, by incurring the displeasure of Anne of Brittany the queen.

The marshal had stopped some of her equipage on the road to Nantz; for which that vindictive princess prevailed on her husband to enter into a process against him before the parliament of Toulouse, at that time the most rigorous and severe in the kingdom. He was on the 15th of February 1506 found guilty, banished from the court, and deprived of the privileges and emoluments of his office for five years. The expence of this prosecution amounted to more than 31,000 livres, and it did no honour either to the king or the queen. If indeed it be true, that the queen was never so much delighted as with the humiliation of her enemies, she had good reason to be satisfied here. John of Authon, who hath entered into a pretty full detail of this affair, reports that Gié, being removed to the *Chateau de Dreux*, became an object of ridicule to the witnesses who had sworn against him. He wore a long white beard, and, quite full of the thoughts of his disgrace, took it on one occasion in his hands and covered his face with it. An ape, belonging to Alain d'Albret, count of Dreux, jumped from a bed where his master was reposing himself, and attacked the beard of Gié, who, with some difficulty, extricated himself. This scene not only occasioned much laughter to the whole company who were present, but likewise became instantly the subject of the farces and mummeries which were then acting in France. Even the school-boys made a representation of it, where, alluding to the name of the queen, they said, that there was a marshal who wished to shoe an ass (*un âne*), but that he received such a blow with the foot, as threw him over the wall into the garden. Marechal de Gié died at Paris, the 22d April 1513, perfectly disgusted with courts and grandeur.

ROHAN (Henry duke of), peer of France, and prince of Leon, was born at the Chateau de Blein in Brittany in 1579. Henry IV. under whose eyes he gave distinguished proofs of his bravery at the siege of Amiens, when only 16 years of age, loved him with as much affection as if he had been his own son. After the death of Henry, he became chief of the Calvinists in

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in France; and was equally formidable for his genius as his sword. In defence of the civil and religious rights of his party, he maintained three wars against Louis XIII. The first, which terminated to the advantage of the Protestants, broke out when that prince wished to establish the Romish religion in Le Bearn: the second, because of the siege which Cardinal De Richlieu caused to be laid to Rochelle: and the third, when that place was besieged a second time. The consequences of this war are sufficiently known: Rochelle surrendered: and the duke de Rohan perceiving, that after the taking of this place, the majority of his party were endeavouring to make up matters with the court, succeeded in procuring for them a general peace in 1629, upon very honourable and advantageous terms. The only sacrifice of importance which the Huguenots were obliged to make, was their fortifications; which put it out of their power to renew the war. Some factious persons, dissatisfied with seeing their fortresses fall into their enemies hands, were ready to accuse their general of having sold them. This great man, undeserving of such odious ingratitude, presented his breast to these enraged malcontents, and said, "Strike, strike! I wish to die by your hands, after I have hazarded my life in your service." The peace of 1629 having extinguished the flame of civil war, the duke de Rohan, no longer of use to his party, and become disagreeable at court, retired to Venice. There is a very particular anecdote of him, extracted from the Memoirs of the duchess of Rohan, Margaret of Bethune, daughter of the famous Sully. Whilst the duke de Rohan was at Venice, a proposal was made to him from the Porte, that for 200,000 crowns, and an annual tribute of 20,000, the Grand Signior would give him the island of Cyprus, and fully invest him with the dignity and prerogatives of king. The duke was warmly inclined to comply with this proposal, and to settle in the island the Protestant families of France and Germany. He negotiated this business at the Porte by means of the intervention of the patriarch Cyril, with whom he had much correspondence; but different circumstances, and in particular the death of the patriarch, occurred to break off the treaty. The republic of Venice chose Rohan for their commander in chief against the Imperialists; but Louis XIII. took him from the Venetians, and sent him ambassador into Switzerland, and into the Grisons. He wished to assist these people in bringing back La Valteline under their obedience, the revolt of which the Spaniards and Imperialists encouraged. Rohan, being declared general of the Grisons, after many victories, drove the German and Spanish troops entirely from La Valteline in 1633. He defeated the Spaniards again in 1636 at the banks of the lake of Côme. France, not thinking it proper to withdraw her troops, the Grisons rose up in arms, and the duke de Rohan, not satisfied with the conduct of the court, entered into a special treaty with them the 28th March 1637. This hero, fearing the resentment of cardinal de Richlieu, retired to Geneva, with a view to join his friend the duke of Saxe-Weimar, who wished him to undertake the command of his army, then ready to engage the Imperialists near Rhinfield. Although he declined this honour, yet he took the command of the regiment of Nassau, with which he threw the enemy into confusion; but was himself wounded, February 28. 1683,

and died of his wounds the 13th of April following, at the age of 59. He was interred May 27th, in the church of St Pierre in Geneva, where there is a magnificent monument of marble erected to his memory, having on it the most illustrious actions of his life. The duke de Rohan was one of the greatest generals of his time, equal to the princes of Orange, and capable, like them, of settling a commonwealth; but more zealous than they for religion, or at least appearing to be so. He was vigilant and indefatigable, not allowing himself any pleasures which might take off his attention from his necessary employments, and well qualified for being the head of a party; a post very difficult to retain, and in which he had to fear equally from his enemies and his friends. It is in this light that Voltaire has viewed this illustrious character, when he composed the following verse:

*Avec tous les talens le Ciel l'avoit fait naître :
Il agit en Heros ; en Sage il écrivit.
Il fut même grand homme en combattant son Maître,
Et plus grand lorsqu'il le servoit.*

His military virtues were much heightened by the sweetness of his disposition, his affable and courteous manners, and by a generosity which had few examples. Neither ambition, pride, nor a view of gain, could ever be traced in his character. He was wont to say, that "true glory and a zeal for the public good never dwelt where self-interest reigned." Rohan had always a particular regard for Henry the Fourth: "Truly (said he, sometimes after the death of that prince) when I think of him, my heart is ready to break. A wound received in his presence would have afforded me more satisfaction than now to gain a battle. I would have valued an encomium from him in this art, of which he was the greatest master of his time, more than than the united praises of all the commanders now living." He wrote several interesting performances: 1. The Interests of Princes, printed at Cologne in 1666, in 12mo: in which work he fully examines the public interests of all the princes of Europe. 2. The Perfect General, or an abridgement of the wars from Cæsar's Commentaries, in 12mo. In this he makes it appear, that a knowledge of the tactics of the ancients might be of much use to the moderns. 3. A Treatise on the Corruption of the ancient Militia. 4. A Treatise on the Government of the Thirteen Provinces. 5. Memoirs; the best edition of which is in 2 vols 12mo. They contain the history of France from 1610 to 1629. 6. A Collection of some Political Discourses on State Affairs, from 1612 to 1629, 8vo, Paris, 1644, 1693, 1755; with the Memoirs and Letters of Henry Duke de Rohan relative to the war of La Valteline, 3 vols 12mo, Geneva, 1757. This was the first edition which appeared of these curious memoirs: We owe it to the great attention and diligence of M. le Baron de Zurlauben, who published them from different authentic manuscripts. He likewise ornamented this edition with geographical, historical, and genealogical notes, and a preface, which contains an abridged, but highly interesting life, of the duke de Rohan, author of the memoirs. The abbé Pérau has also written a life of him, which occupies the 21st and 22d volumes of the History of the Illustrious Men of France. Some want of spirit might be excused in the detail of wars finished upwards of 140

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years ago; yet the memoirs of the duke de Rohan still afford considerable pleasure in the perusal. He tells his story with humour, with sufficient exactness, and in such a style as procures the confidence of the reader.

ROHAULT (James), a celebrated Cartesian philosopher, was the son of a merchant of Amiens, where he was born in 1620. He became well skilled in the mathematics, and taught them at Paris, where he became acquainted with M. Clerfelier, an advocate, who gave him his daughter in marriage. Rohault also taught philosophy in the same city with uncommon applause. He there improved the arts, and gave excellent lectures to the artists and workmen. He died at Paris in 1675. He wrote, in French, 1. A Treatise on Natural Philosophy. 2. The Elements of the Mathematics. 3. A Treatise on Mechanics, which is very curious. 4. Philosophical Conversations; and other works. His Physics have been translated into Latin, by Dr Samuel Clarke, with notes, in which the Cartesian errors are corrected upon the Newtonian system.

ROLANDRA, in botany: A genus of the polygamia segregata order, belonging to the syngenesia class of plants; and in the natural method ranking under the 49th order, *Compositæ*. The common calyx consists of distinct *flosculi*, between each of which are short *squamæ*, the whole forming a round head. The partial calyx is bivalved. The corolla is small and funnel-shaped, the tube small as a thread, the *lacina* short and acute. The stamina are five; the style bifid. It has no other seed vessel except the partial calyx, which contains a long three-sided seed. Of this there is only one species, viz. the *Argentea*; a native of the West Indies, and found in copses and waste lands.

ROLL, in manufactories, something wound and folded up in a cylindrical form.

Few stuffs are made up in rolls, except satins, gawses, and crapes; which are apt to break, and take plaits not easy to be got out, if folded otherwise. Ribbons, laces, gallons, and paduas of all kinds, are also thus rolled.

A roll of tobacco, is tobacco in the leaf, twisted on the mill, and wound twist over twist about a stick or roller. A great deal of tobacco is sold in America in rolls of various weights; and it is not till its arrival in England, Spain, France, and Holland, that it is cut.

A roll of parchment, properly denotes the quantity of 60 skins.

The ancients made all their books up in the form of rolls; and in Cicero's time the libraries consisted wholly of such rolls.

ROLL, in law, signifies a schedule or parchment which may be rolled up by the hand into the form of a pipe.

In these schedules of parchment, all the pleadings, memorials, and acts of court, are entered and filed by the proper officer; which being done, they become records of the court. Of these there are in the exchequer several kinds, as the great wardrobe roll, the cofferer's roll, the subsidy-roll, &c.

Roll is also used for a list of the names of persons of the same condition, or of those who have entered into the same engagement. Thus a court-roll of a manor, is that in which the names, rents, and services, of each tenant are copied and enrolled.

Calves-head Roll, a roll in the two temples, in which every bench is taxed yearly at 2 s. every barrister at 1 s. 6 d. and every gentleman under the bar at 1 s. to the cook and other officers of the house, in consideration of a dinner of calves-heads provided in Easter-term.

Mustel-Roll, that in which are entered the soldiers of every troop, company, regiment, &c. As soon as a soldier's name is written down on the roll, it is death for him to desert.

Rolls-Office, is an office in Chancery-lane, London, appointed for the custody of the rolls and records in chancery.

Master of the ROLLS. See *MASTER of the ROLLS*.

Rider-Roll, a schedule of parchment frequently sewed or added to some part of a roll or record.

Rolls of Parliament, are the manuscript registers or rolls of the proceedings of our ancient parliaments, which before the invention of printing were all engrossed on parchment, and proclaimed openly in every county. In these rolls are also contained a great many decisions of difficult points of law, which were frequently in former times referred to the decision of that high court.

ROLL, or *Roller*, is also a piece of wood, iron, brass, &c. of a cylindrical form, used in the construction of several machines, and in several works and manufactures.

Thus in the glass manufacture they have a running-roll, which is a thick cylinder of cast brass, which serves to conduct the melted glass to the end of the table on which large looking-glasses, &c. are cast.

Founders also use a roll to work the sand which they use in making their moulds.

The presses called *calendars*, as serving to calendar stuffs withal, consist, among other essential parts, of two rollers. It is also between the two rollers that the waves are given to silks, mohairs, and other stuffs proper to be tabbied.

Impressions from copper-plates are also taken by passing the plate and paper between two rollers. See *Rolling-press PRINTING*.

Rolls, in flattening-mills, &c. are two iron instruments of a cylindrical form, which serve to draw or stretch out plates of gold, silver, and other metals.

Rolls, in sugar-works, are two large iron barrels which serve to bruise the canes, and to express the juice. These are cast hollow, and their cavities are filled up with wood, the cylinders of which are properly the rollers.

ROLLER, in surgery, a long and broad bandage, usually of linen-cloth, rolled round any part of the body, to keep it in, or dispose it to a state of health.

ROLLI (Paul), was born at Rome in 1687. He was the son of an architect, and a pupil of the celebrated Gravina, who inspired him with a taste for learning and poetry. An intelligent and learned English lord having brought him to London, introduced him to the royal family as a master of the Tuscan language. Rolli remained in England till the death of queen Caroline his protector, and the patroness of literature in general. He returned to Italy in 1747, where he died in 1767, in the 80th year of his age, leaving behind him a very curious collection in natural history, &c. and a valuable and well chosen library. His principal works first appeared

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appeared in London in 1735, in 8vo. They consist of odes in blank verse, elegies, songs, and other things, after the manner of Catullus. There is likewise, by him, a Collection of Epigrams, printed at Florence in 1776, in 8vo, and preceded with his life by the abbé Fondini. What Martial said of his own Collection may be said of this, "That there are few good, but many indifferent or bad, pieces in it." Rolli, however, bore the character of one of the best Italian poets of his age. During his stay in London, he procured editions of several authors of his own country. The principal of these were, the Satires of Ariosto, the Burlesque Works of Berni, Varchi, &c. 2 vols, in 8vo, which possess considerable merit. The Decameron of Boccace, 1727, in 4to and folio; in which he has faithfully copied the celebrated and valuable edition published by the *Juntas* in 1527: and, lastly, of the elegant Lucretia of Marchetti, which, after the manuscript was revised, was printed at London in 1717, in 8vo, through the influence and attention of Rolli. This edition is beautiful; but the work is thought of pernicious tendency. There are likewise, by him, translations into Italian verse of the Paradise Lost of Milton, printed at London in folio in 1735; and of the Odes of Anacreon, London 1739, in 8vo.

ROLLIN (Charles), a justly celebrated French writer, was the son of a cutler at Paris, and was born there on the 30th of January 1661. He studied at the college Du Plessis, in which he obtained a bursary through the interest of a Benedictine monk of the White Mantle, whom he had served at table, and who discovered in him some marks of genius. Here he acquired the regard of M. Gobinet, principal of that college, who had a particular esteem for him. After having studied humanity and philosophy at the college of Du Plessis, he applied to divinity three years at the Sorbonne; but he did not prosecute this study, and never rose in the church higher than to the rank of a tonsured priest. He afterwards became professor of rhetoric in the same college; and, in 1688, succeeded Horfan, his master, as professor of eloquence, in the royal college. No man ever exercised the functions of it with greater éclat: he often made Latin orations, to celebrate the memorable events of the times; and frequently accompanied them with poems, which were read and esteemed by every body. In 1694, he was chosen rector of the university; and continued in that office two years, which was then a great mark of distinction. By virtue of his office, he spoke the annual panegyric upon Louis XIV. He made many very useful regulations in the university; and particularly revived the study of the Greek language, which was then much neglected. He substituted academical exercises in the place of tragedies; and introduced the practice which had been formerly observed, of causing the students to get by heart passages of Scripture. He was a man of indefatigable attention; and trained innumerable persons, who did honour to the church, the state, and the army. The first president Portail was pleased one day to reproach Rollin in a jocular strain, as if he exceeded even himself in doing business: to whom Rollin replied, with that plainness and sincerity which was natural to him, "It becomes you well, Sir, to reproach me with this; it is this habit of labour in me which has distinguished you in the place of

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advocate-general, which has raised you to that of first president: you owe the greatness of your fortune to me."

Upon the expiration of the rectorship, cardinal Noailles engaged him to superintend the studies of his nephews, who were in the college of Laon; and in this office he was agreeably employed, when, in 1699, he was with great reluctance made coadjutor to the principal of the college of Beauvais. This college was then a kind of desert, inhabited by very few students, and without any manner of discipline: but Rollin's great reputation and industry soon re-peopled it, and made it that flourishing society it has ever since continued. In this situation he continued till 1712; when the war between the Jesuits and the Jansenists drawing towards a crisis, he fell a sacrifice to the prevalence of the former. Father le Tellier, the king's confessor, a furious agent of the Jesuits, infused into his master prejudices against Rollin, whose connections with cardinal de Noailles would alone have sufficed to have made him a Jansenist; and on this account he lost his share in the principality of Beauvais. No man, however, could have lost less in this than Rollin, who had every thing left him that was necessary to make him happy; retirement, books, and enough to live on. He now began to be employed upon Quintilian; an author he justly valued, and saw neglected not without uneasiness. He retrenched in him whatever he thought rather curious than useful for the instruction of youth; he placed summaries or contents at the head of each chapter; and he accompanied the text with short select notes. His edition appeared in 1715, in 2 vols 12mo, with an elegant preface, setting forth his method and views.

In 1710, the university of Paris, willing to have a head suitable to the importance of their interests in the then critical conjuncture of affairs, chose Rollin again rector: but he was displaced in about two months by a lettre de cachet. The university had presented to the parliament a petition, in which it protested against taking any part in the adjustment of the late disputes; and their being congratulated in a public oration by Rollin on this step, occasioned the letter which ordered them to choose a rector of more moderation. Whatever the university might suffer by the removal of Rollin, the public was probably a gainer; for he now applied himself to compose his treatise upon the Manner of Studying and Teaching the Belles Lettres, which was published, two volumes in 1726, and two more in 1728, 8vo.

This work has been justly esteemed for the sentiments of religion which animate its author, whose zeal for the public good prompted him to select the choicest passages of Greek and Latin authors. The style is sufficiently elegant, but the language on some occasions is not remarkable for delicacy; and in the book altogether there is neither much order nor depth. The author has indeed spoken of common things agreeably, and has spoken as an orator on subjects which demanded the investigation of the philosopher. One can scarcely reduce any thing in him to principles.—For example, the three species of eloquence; the simple, the temperate, and the sublime, can scarcely be understood from him when we read that the one resembles a frugal table; the second a beautiful ruin, with green wood growing

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on its banks; and the third thunder and an impetuous river which overthrows every thing that opposes it.

The work, however, has been exceedingly successful, and justly so; and its success encouraged its author to undertake another work of equal use and entertainment; his *Histoire Ancienne*, &c. or "Ancient History of the Egyptians, Carthaginians, Assyrians, Babylonians, Medes and Persians, Macedonians, and Greeks," which he finished in 13 vols 8vo. and published between 1730 and 1738. M. Voltaire, after having observed that Rollin was "the first member of the university of Paris who wrote French with dignity and correctness," says of this work, that "though the last volumes, which were written in too great a hurry, are not equal to the first, it is nevertheless the best compilation that has yet appeared in any language; because it is seldom that compilers are eloquent, and Rollin was remarkably so." This is perhaps saying too much. There are indeed in this work some passages very well handled; but they are only such as he had taken from the ancient authors, in doing justice to whom he was always very happy. The reader will easily discover in this work the same attachment to religion, the same desire for the public good, and the same love of virtue, which appears in that on the *Belles Lettres*. But it is to be lamented that his chronology is neither exact nor corresponding; that he states facts inaccurately; that he has not sufficiently examined the exaggerations of ancient historians; that he often interrupts the most solemn narrations with mere trifles; that his style is not uniform; and this want of uniformity arises from his borrowing from writers of a modern date 40 or 50 pages at a time. Nothing can be more noble and more refined than his reflections; but they are strewn with too sparing a hand, and want that lively and laconic turn on account of which the historians of antiquity are read with so much pleasure. He transgresses the rule which he himself had established in his *Treatise on Studies*. "The precepts which have a respect to manners (says he) ought, in order to make an impression, to be short and lively, and pointed like a dart. That is the most certain method of making them enter and remain on the mind." There is a visible negligence in his diction with regard to grammatical custom, and the choice of his expressions, which he does not choose at all times with sufficient taste, although, on the whole, he writes well, and has preserved himself free from many of the faults of modern authors. While the last volumes of his ancient history were printing, he published the first of his *Roman History*; which he lived to carry on, through the eighth and into part of the ninth, to the war against the Cimbri, about 70 years before the battle of Actium. Mr Crevier, the worthy disciple of Rollin, continued the history to the battle of Actium, which closes the tenth volume; and has since completed the original plan of Rollin in 16 vols 12mo, which was to bring it down from the foundation of the city to the reign of Constantine the Great. This history had not so great success as his *Ancient History* had. Indeed it is rather a moral and historical discourse than a formal history; for the author does little more than point out some more remarkable events, while he dwells with a sort of prolixity on those parts which furnish him a free field for moralizing. It is alternately diffuse and barren; and the greatest advantage of the work is, that there are several passages from T.

Livy translated with great elegance into French. He also published A Latin Translation of most of the Theological Writings relative to the disputes of the Times in which he lived. Rollin was one of the most zealous adherents of deacon Paris; and before the inclosure of the cemetery of St Medard, this distinguished character might have been often seen praying at the foot of his tomb. This he confesses in his Letters. He published also Lesser Pieces; containing different Letters, Latin Harangues, Discourses, Complimentary Addresses, &c. Paris 1771, 2 vols. 12mo. A collection which might have been contained in one volume, by keeping in only the best pieces. It is notwithstanding valuable for some good pieces which it contains, for the favourable opinion which it exhibits of solid probity, sound reason, and the zeal of the author for the progress of virtue and the preservation of taste. The Latin of Rollin is very correct, and much after the Ciceronian style, and embellished with most judicious thoughts and agreeable images. Full of the reading of the ancients, from which he brought quotations with as much propriety as plenty, he expressed himself with much spirit and excellence. His Latin poems deserve the same eulogium.

This excellent person died in 1741. He had been named by the king a member of the academy of inscriptions and belles lettres in 1701: but as he had not then brought the college of Beauvais into repute, and found he had more business upon his hands than was consistent with a decent attendance upon the functions of an academician, he begged the privileges of a veteran, which were honourably granted him. Nevertheless, he maintained his connections with the academy, attended their assemblies as often as he could, laid the plan of his ancient history before them, and demanded an academician for his censor. Rollin was a man of an admirable composition; very ingenious, consummate in polite learning, of rigid morals, and eminently pious. He was rather too religious; his religion carrying him into the territories of superstition; and he wanted nothing but a mixture of the philosophic in his nature to make him a very perfect character. Nothing could be more benign, more pacific, more sweet, more moderate, than Rollin's temper. He showed, it must be owned, some zeal for the cause of Jansenism; but in all other respects he was exceedingly moderate. The celebrated poet Rousseau conceived such a veneration for him, that he came out of banishment incognito to Paris, on purpose to visit him and pay his respects to him. He looked upon his histories, not only as the best models of the historic kind, but as a complete system of politics and morals, and a most instructive school for princes as well as subjects to learn all their duties in.

Instead of blushing at the lowness of his birth, Rollin on no occasion hesitated to speak of it. "It is from the Cyclops's shop (says he, in a Latin epigram to one of his friends, to whom he had sent a small sword) that I have taken my flight towards Parnassus." He was not, however, without some share of vanity, especially at hearing mention made of his writings, of which the well-timed praises of his adherents had given him a very high opinion. He spoke without any dissimulation what he thought; and his opinions were less the effect of presumption than of openness of heart. He was one of those men who are vain without any mixture of pride.

Rollin.

Rolling,
Rollo.

pride. Rollin spoke pretty well; but he had a greater readiness of writing than speaking; and much more satisfaction might be derived from his works than from his conversation. His name became famous throughout Europe; several princes sought the honour of his friendship. The duke of Cumberland and the prince-royal of Prussia (afterwards king) were among the list of his admirers. This monarch honoured him with several letters; in one of which he pays him the following compliment, "Men of your character are fit companions for kings." As to the literary merit of this author, it was, we suspect, too much extolled in his own time, and has been too much undervalued in ours.

ROLLING, the motion by which a ship rocks from side to side like a cradle, occasioned by the agitation of the waves.

Rolling, therefore, is a sort of revolution about an imaginary axis passing through the centre of gravity of a ship: so that the nearer the centre of gravity is to the keel, the more violent will be the rolling motion; because the centre about which the vibrations are made is placed so low in the bottom, that the resistance made by the keel to the volume of water which it displaces in rolling, bears very little proportion to the force of the vibration above the centre of gravity, the radius of which extends as high as the mast-heads.

But if the centre of gravity is placed higher above the keel, the radius of vibration will not only be diminished, but an additional force to oppose the motion of rolling will be communicated to that part of the ship's bottom which is below the centre of gravity.

So far as relates to the effect of rolling, when produced by the quality or stowage of the ballast, and to the manner by which it may be prevented, viz. a change of the quantity or disposition of the ballast, we shall endeavour to explain under the article TRIM. It may, however, be necessary to remark, that the construction of the ship's bottom may also contribute to diminish this movement considerably.

Many fatal disasters have happened to ships arising from a violent rolling; as the loss of the masts, loosening of the cannon, and straining violently on the decks and sides, so as to weaken the ship to a great degree. See PITCHING.

ROLLING-Press. See Rolling-PRESS.

ROLLING-Tackle, a pulley or purchase fastened to that part of a sail-yard which is to the windward of the mast, in order to confine the yard close down to the leeward when the sail is furled.

It is used to prevent the yard from having a great friction against the mast in a high sea, which would be equally pernicious to both.

ROLLO, the conqueror of Normandy, was a Norwegian duke, banished from his country by Harold Harfagre, who conquered Norway in 870, on account of the piracies he exercised. He first retired with his fleet among the islands of the Hebrides to the north-west of Scotland, whither the flower of the Norwegian nobility had fled for refuge ever since Harold had become master of the whole kingdom. He was there received with open arms by those warriors, who, eager for conquest and revenge, waited only for a chief to undertake some glorious enterprise. Rollo setting himself at their head, and seeing his power formidable, sailed towards England, which had been long as it

were a field open on all sides to the violence of the northern nations. But the great Alfred had some years before established such order in his part of the island, that Rollo, after several fruitless attempts, despaired of forming there such a settlement as should make him amends for the loss of his own country. He pretended, therefore, to have had a supernatural dream, which promised him a glorious fortune in France, and which served at least to support the ardour of his followers. The weakness of the government in that kingdom, and the confusion in which it was involved, were still more persuasive reasons to insure them of success. Having therefore sailed up the Seine to Rouen, he immediately took that capital of the province, then called *Neustria*, and making it his magazine of arms, he advanced up to Paris, to which he laid siege in form. This war at length ended in the entire cession of Neustria, which Charles the Simple was obliged to give up to Rollo and his Normans in order to purchase a peace. Rollo received it in perpetuity to himself and his posterity, as a feudal duchy dependant on the crown of France. A description of the interview between Charles and this new duke gives us a curious picture of the manners of these Normans (as they were called by foreigners); for the latter would not take the oath of fealty to his sovereign lord any other way than by placing his hands within those of the king; and absolutely refused to kiss his feet, as custom then required. It was with great difficulty he was prevailed on to let one of his warriors perform this ceremony in his stead; but the officer to whom Rollo deputed this service, suddenly raised the king's foot so high, that he overturned him on his back; a piece of rudeness which was only laughed at: to such a degree were the Normans feared, and Charles despised.

Soon after, Rollo was persuaded to embrace Christianity, and he was baptized with much ceremony by the archbishop of Rouen in the cathedral of that city. As soon as he saw himself in full possession of Normandy, he exhibited such virtues as rendered the province happy, and deserved to make his former outrages forgotten. Religious, wise, and liberal, this captain of pirates became, after Alfred, the greatest and most humane prince of his time.

ROMAN, in general, something belonging to the city of Rome. See ROME.

KING OF THE ROMANS, in modern history, is a prince elected to be successor to the reigning emperor of Germany.

ROMANCE, in matters of literature, a fabulous relation of certain adventures designed for the entertainment and instruction of the readers, and differing from the *novel* as it always exhibits actions great, dangerous, and generally extravagant. Many authors of the first name have written on the ancient *romance*. It has exercised the pen of Hurd, of Warburton, and of some ladies, who have not thought it any derogation to the sensibility of their sex to unite antiquarian research with the cultivation of the *belles lettres*. We have not, however, seen anywhere so concise, just, and elegant an account of the origin and progress of *romances* as in D'Israeli's *Curiosities of Literature*. "Romance (says this writer) has been elegantly defined the offspring of fiction and love. Men of learning have amused themselves with tracing the epocha of romances. In this

Rollo
||
Romance.

Romance. research they have displayed more ingenuity than judgment; and some have fancied that it may have existed as far back as the time of Aristotle; Dearchus, one of his disciples, having written several works of this amusing species.

"Let us, however, be satisfied in deriving it from the Theagenes and Chariclea of Heliodorus, a bishop who lived in the 4th century, and whose work has been lately translated. This elegant prelate was the Grecian Epeion (A). Beautiful as these compositions are when the imagination of the writer is sufficiently stored with accurate observations on human nature, in their birth, like many of the fine arts, they found in the zealots of religion men who opposed their progress. However Heliodorus may have delighted those who were not insensible to the felicities of a fine imagination, and to the enchanting elegancies of style, he raised himself, among his brother ecclesiastics, enemies; who at length so far prevailed, that it was declared by a synod, that his performance was dangerous to young persons, and that if the author did not suppress it, he must resign his bishoprick. We are told he preferred his romance to his bishoprick. Even so late as in Racine's time, it was held a crime to peruse these unhallowed pages. He informs us, that the first effusions of his muse were in consequence of studying that ancient romance, which his master observing him to devour with the keenness of a famished man, he snatched it from his hands and flung it in the fire; a second copy experienced the same fate. What could Racine do? He bought a third, and took the precaution of devouring it secretly till he got it by heart; after which he offered it to his master with a smile to burn, if he chose, like the others.

The decision of these bigots was founded in their opinion of the immorality of such works. They alleged, that the writers paint too warmly to the imagination, address themselves too forcibly to the passions; and in general, by the freedom of their representations, hover on the borders of indecency. This censure is certainly well-founded. Many of the old romances, and even of the dramas, acted in Scotland two centuries ago, are such as common prostitutes would in this age think indecent. But we are at present concerned with the origin of romance.

"The learned Fleury thinks that they were not known till the 12th century, and gives as their original the history of the dukes of Normandy. Verdier, whose opinion is of no great weight, says the invention of romance was owing to the Normans of France; and that these fictions being originally written in the old Norman language, they were intitled *Normances*; the name was afterwards altered to that of *Romances*. The Spaniards, who borrowed them from the French, called them *Romanzes*, which also did the Italians.

"Dom Rivet, one of the learned associates of the con-

gregation of St Maur, authors of the Literary History of France, fixes their origin in the 10th century. He says, that the most ancient romance known was one which appeared in the middle of that century, under the title of *Philomena*, or *the Beloved*. This romance contains the pretended exploits of Charlemagne before Narbonne. At Toulouse, he tells us, they have preserved a copy of the *Philomena* in its original language; that is to say, the Romaunt or polished; such as was then spoken at court. They preferred this language to the Latin, which was then that of the common people, but vitiated with their corruptions.

"So far have we travelled on the road of conjecture: we shall now turn into the path of fact. It is certain that these compositions derive their name from the language in which they were first written. Abbé Traird has given us the character of the earliest romances, which we shall transcribe; for to add to what is well expressed, however it may please the vanity of a writer, seldom tends to the gratification of the reader.

'The first romances were a monstrous assemblage of histories, in which truth and fiction were equally blended, but all without probability; a composition of amorous adventures, and all the extravagant ideas of chivalry. The incidents are infinitely multiplied; destitute of connection, of order, and art. These are the ancient and miserable romances which Cervantes, in his celebrated satirical romance of *Don Quixote*, has covered with an eternal ridicule.'

"It is, however, from these productions rather in their improved state, that poets of all nations have drawn their richest inventions. The agreeable wildness of that fancy which characterised the eastern nations was caught by the crusaders. When they returned home, they mingled in their own the customs of each country. The Saracens, who were men like themselves, because they were of another religion, and were therefore their enemies, were pictured under the tremendous form of *Paganim Giants*. The credulous reader of that day followed with trembling anxiety the *Red-cross Knight*. It was thus that fiction embellished religion, and religion invigorated fiction. Such incidents have enlivened the cantos of Ariosto, and adorned the epic of Tasso. Spenser is the child of their creation; and it is certain that we are indebted to them for some of the bold and strong touches of Milton."

Other circumstances however have been assigned as the sources of these extravagant fictions. "Castles were erected to repulse the vagrant attacks of the Normans; and in France (from the year 768 to 987) these places became fatal to the public repose. The petty despots who raised these castles, pillaged whoever passed, and carried off the females who pleased them. Rapine, of every kind, was the privilege of Lords! Mezeray observes, that it is from these circumstances romancers have

(A) An ingenious and learned friend inquires, 'Is not the romance of the Golden Ass, by Apuleius, to be considered as an earlier specimen than that of Heliodorus?' To this our author has no objection; but he would not warrant any romance to be the *first* that ever was written. It is thus that some writers, more learned than sagacious, have discovered the first inventor of epistolary correspondence. A lady receives this honour: such learning is desperate! From the Asiatic Researches and other publications on Oriental literature, we are led to believe, that the native country of romance is the east; where it seems to have flourished in all its extravagant grandeur from time immemorial.

Romance. have invented their tales of knights-errant, monsters, and giants.

"De Saint Foix, in his Historical Essays on this subject, thus expresses himself: 'Women and girls were not in greater security when they passed by abbeys. The monks sustained an assault rather than relinquish their prey: if they saw themselves losing ground, they brought to their walls the relics of some saint. Then it generally happened that the assailants, seized with awful veneration, retired, and dared not to pursue their vengeance. This is the origin of the enchanters, of the enchantments, and of the enchanted castles, described in romances.'

"To these may be added what the author of Northern Antiquities, Vol. I. p. 243, writes, that 'as the walls of the castles ran winding round them, they often called them by a name which signified *serpents* or *dragons*; and in these were commonly secured the women and young maids of distinction, who were seldom safe at a time when so many bold warriors were rambling up and down in search of adventures. It was this custom which gave occasion to ancient romancers, who knew not how to describe any thing simply, to invent so many fables concerning princesses of great beauty, guarded by dragons.'

"The Italian romances of the 14th century were spread abroad in great numbers. They formed the polite literature of the day. But if it is not permitted to authors freely to express their ideas, and give full play to the imagination, these works must never be placed in the study of the rigid moralist. They indeed pushed their indelicacy to the verge of grossness, and seemed rather to seek than to avoid scenes which a modern would blush to describe. They (to employ the expression of one of their authors) were not ashamed to name what God had created. Cinthio, Bandello, and others, but chiefly Boccacio, rendered libertinism agreeable, by the fascinating charms of a polished style, and a luxuriant imagination.

"This however must not be admitted as an apology for immoral works; for poison is still poison, even when it is delicious. Such works were, and still continue to be, the favourites of a nation which is stigmatised for being prone to illicit pleasures and impure amours. They are still curious in their editions, and are not parsimonious in their price for what they call an uncastrated copy. There are many Italians, not literary men, who are in possession of an ample library of these old novelists.

"If we pass over the moral irregularities of these romances, we may discover a rich vein of invention, which only requires to be released from that rubbish which disfigures it to become of an invaluable price. The Decamerons, the Hecatommithi, and the Novellas of these writers, made no inconsiderable figure in the little library of our Shakespeare. Chaucer is a notorious imitator and lover of them; his Knight's Tale is little more than a paraphrase of Boccacio's Teseoide. Fontaine has caught all their charms with all their licentiousness. From such works, these great poets, and many of their contemporaries, frequently borrowed their plots; not uncommonly kindled at their flame the ardour of their genius; but bending too submissively to their own peculiar taste, or that of their age, in extracting the ore, they have not purified it of the alloy.

"We must now turn our contemplation to the French romances of the last century. They were then carried to a point of perfection, which as romances they cannot exceed. To this the *Astrea* of D'Urfé greatly contributed. It was followed by the illustrious *Bassa*, the great *Cyrus*, *Clelia*, &c. which, though not adapted to the present age, gave celebrity to their authors. Their style, as well as that of the *Astrea*, is diffuse and insipid. *Zaide* (attributed by some to Segrais, but by Huet to Madame La Fayette) and the princess of Cleves are translated, and though they are masterpieces of the kind, were never popular in our country, and are little adapted to its genius.

"It is not surprising that romances have been regarded as pernicious to good sense, morals, taste, and literature. It was in this light they were considered by Boileau; because a few had succeeded, a crowd imitated their examples. Gomberville and Scudery, and a few more were admired; but the satirist dissolved the illusion. This he did most effectually by a dialogue, in which he ridicules those citizens of a certain district, whose characters were concealed in these romances, under the names of Brutus, Horace Cocles, Lucretius, and Clelia. This dialogue he only read to his friends, and did not give it for a long time to the public, as he esteemed mademoiselle de Scudery: but when at length it was published, it united all the romance writers against our satirist.

"From romances, which had now exhausted the patience of the public, sprung novels. They attempted to allure attention by this inviting title, and reducing their works from ten to two volumes. The name of romance disgusted; and they substituted those of histories, lives, memoirs, and adventures. In these works (observes Irai) they quitted the unnatural incidents, the heroic projects, the complicated and endless intrigues, and the exertion of noble passions; heroes were not now taken from the throne, they were sought for even amongst the lowest ranks of the people. On this subject, I shall just observe, that a novel is a very dangerous poison in the hand of a libertine; it may be a salutary medicine in that of a virtuous writer." See NOVEL.

ROMAGNA, a province of Italy, in the pope's territories, bounded on the north by the Ferrarese, on the south by Tuscany and the duchy of Urbino, on the east by the Gulf of Venice, and on the west by the Bolognese and a part of Tuscany. It is fertile in corn, wine, oil, fine fruits, and pastures. It has also mines, mineral waters, and salt-works, which make its principal revenue. Ravenna is the capital town.

ROMANIA, a province of Turkey in Europe, bounded on the north by Bulgaria, on the east by the Black Sea, on the south by the Archipelago and the sea of Marmora, and on the west by Macedonia and Bulgaria; being 200 miles in length and 150 in breadth. It was formerly called *Thrace*, and is the principal and largest of all the provinces the Turks possess in Europe. It is a fruitful country in corn and pastures, and there are mines of silver, lead, and alum. It is divided into three great governments or sangiacates; namely, Kerkel, of which Philipoli is the capital; Galipoli, whose capital is of the same name; and Byzantium, or Byzia, of which Constantinople is the capital. The Turks bestow the name

Romance
||
Romania.

Romano,
Rome.

name of *Romelia* on all the territories they possess in Europe.

ROMANO (Giulio), a famous painter, was the disciple of Raphael, who had such an affection for him, that he appointed him, with John Francis Penni, his heir. His conceptions were more extraordinary and more elevated than even those of his master, but not so natural. He was wonderful in the choice of attitudes; but did not perfectly understand the lights and shades, and is frequently harsh and ungraceful. The folds of his draperies, says Du Fresnoy, are neither beautiful nor great, easy nor natural, but all extravagant, like the fantastical habits of comedians. He was, however, superior to most painters, by his profound knowledge of antiquity; and, by conversing with the works of the most excellent poets, particularly Homer, he made himself master of the qualifications necessarily required in a great designer. Julio Romano was also well skilled in architecture. He was employed by cardinal de Medicis, who was afterwards pope under the name of *Clement VII.*; and afterwards went to Mantua, whither he was invited by Frederic Gonzaga, marquis of that city, in order to avoid his being justly punished for his having drawn at Rome the designs of 20 obscene plates, engraved by Mark Antony, to which Aretine added the same number of sonnets. Julio Romano embellished the city of Mantua with many of his performances both in painting and architecture; and died in that city in 1545, at 54 years of age, much regretted by the marquis, who had an extraordinary friendship for him.

ROME, a very ancient and celebrated city of Italy, situated on the river Tiber, in E. Long. 13°. N. Lat. 41. 45. once the capital of the greatest empire in the world; and famous in modern history for being the centre of an ecclesiastical tyranny, by which for many ages the greatest part of the world was held in subjection.

Romans descended from Æneas.

The ancient Romans derived their origin from Æneas the Trojan hero: and though some historians pretend to treat his voyage into Italy as a mere fable, yet no sufficient reasons for rejecting this account have been offered, nor has any more probable history of the origin of the Roman name been given; so that, without entering into the dispute, we shall proceed to the history of Æneas and his successors as they are recorded by the generality of Latin writers.

Æneas flies from Troy to Mount Ida.

When the Greeks, by the treachery of the sons of Antenor, or by whatever other means it happened, were become masters of Troy, Æneas with the forces under his command retired into the fortress of the city, and defended it bravely for some time; but yielding at length to necessity, he conveyed away his gods, his father, wife, and children, with every thing he had that was valuable, and, followed by a numerous crowd of Trojans, fled to the strong places of Mount Ida. Hither all those of his countrymen, who were more anxious than the rest to preserve their liberty, flocked to him from the several towns of Troas. His army thus augmented and advantageously posted, he continued quiet, waiting for the departure of the Greeks, who, it was imagined, would return home as soon as they had pillaged the country. But these, after they had enriched themselves with the spoils of Troy and of the neighbouring towns, turned their arms against the fu-

gitives, resolving to attack them in their strong-holds upon the mountain. Æneas, to avoid the hazard of being forced in his last refuge, had recourse to negotiation; and, by his heralds, intreated the enemy not to constrain him to a battle. Peace was granted him, on condition that he with his followers quitted the Trojan territories; and the Greeks, on their part, promised not to molest him in his retreat, but to let him safely pass through any country within the extent of their domination.

Rome.

3
Makes peace with the Greeks, and leaves

Upon this assurance Æneas equipped a fleet, in order to seek a settlement in some foreign land. We are told, that at his departure he left his eldest son Ascanius with the Dasyrites, a people of Bithynia, who desired to have him for their king; but that the young prince did not remain long with them: for when Scamandrius (Astyanax), with the rest of the Hectoridae whom Neoptolemus permitted to return home from Greece, repaired to him, he put himself at their head, and led them back to their native country.

The Trojan having crossed the Hellespont, arrived in the peninsula of Pallene, where he built a city, called from him *Æneia*, and left in it a part of that multitude which had followed him. From thence he sailed to Delos; and thence to Cythera, where he erected a temple to Venus. He built another to the same goddess in Zacynthus, in which island he likewise instituted games, called the *races of Æneas and Venus*: the statues of both, says Dionysius, are standing to this day. In Leucas, where the Trojans landed, was to be seen, in the same author's time, a temple erected to Venus the mother of Æneas. Nor were Actium and Ambracia without monuments that testified his arrival in those places. At Dodona were found brazen vases, upon which the name of the Trojan hero, who had made an offering of them to Jupiter, was engraven in old characters. Not far from Buthrotos, in Epirus, a Trojan camp which had escaped the injuries of time, retained the name of *Troja*. All these antiquities, still subsisting in the reign of Augustus, were then looked upon as indisputable proofs of Æneas's voyage to Epirus: "and that he came into Italy (adds the same Dionysius) we have the concurrent testimony of all the Romans; the ceremonies they observe in their sacrifices and festivals bear witness to it, as also the Sibylline books, the Pythian oracles, and many other things which nobody can reasonably reject as invented merely for ornament."

The first land of Italy which Æneas made, after crossing the Ionian sea, was cape Minerva, in Iapygia; and here he went on shore. Sailing afterwards from hence, and coasting along the south-east of Italy and the east and south sides of Sicily, he arrived with his fleet either by choice or by stress of weather at the port of Drepanum in that island. Elymus and Ægestus, who had escaped from Troy a little before him, had brought a Trojan colony to this place. Æneas augmented it by a good number of his followers, whom, pleased to have found a safe resting place after many dangers and fatiguing voyages, he willingly left behind him at their request; though certain authors pretend that he was constrained to it by the difficulty of transporting them, because some Trojan women, weary of the sea, had burnt a considerable part of his ships.

Æneas, leaving Drepanum, steered his course for Italy

Rome

Rome.

4
Lands in
Italy.

taly across the Tyrrhenian sea. To the cape where he first landed, he gave the name *Palinurus*, from one of his pilots who died there. The little island of Leucadia, not far distant, whither he sailed next, got its name in like manner from a daughter of Æneas's sister, who there ended her days. The port of Misenum, the island of Prochyta, and the promontory of Cajeta, where he successively arrived, were so called from being the burial places, the first of a noble Trojan his companion, the second of his kinswoman, and the third of his nurse. At length the Trojan prince and his chosen band finished their tedious and painful voyages on the coast of the since famous Latium. This was a small territory on the east side of the river Tiber, containing a part of the present *Campagna di Roma*: Latinus was the king of it; his capital town, Laurentum; his subjects, a people who, till his time called *Aborigines*, had from him taken the name of *Latins*. Here, far removed from their implacable enemies the Greeks, Æneas and his followers undertook to raise a second Troy: they fortified a camp near the mouth of the Tiber, gave it the name of *Troy*, and flattered themselves with the hopes of a quiet settlement, and a period to all their unhappy adventures.

When Æneas arrived in Italy, Latinus was engaged in a war with the Rutuli, a neighbouring people, in which he was attended but with very indifferent success, when news was brought him that a foreign army had made a descent on his coasts, pillaged the maritime part of his dominions, and were fortifying themselves in a camp at a small distance from the sea. Hereupon he marched against them with all his forces, hoping to oblige them to reembark and abandon his dominions, without meeting with any great resistance from a band of vagabonds, as he supposed, or pirates, come only to seek for plunder: but finding them, as he drew near, well-armed, and regularly drawn up, he thought it advisable to forbear engaging troops that appeared so well disciplined; and, instead of venturing a battle, to desire a parley. In this conference Latinus understanding who they were, and being at the same time struck with terror, and touched with compassion for those brave but unfortunate men, entered into a treaty with them, and assigned them a tract of land for a settlement, on condition that they should employ their arms and exert their valour in defence of his dominions, and look upon the Rutuli as a common

5
Enters into
an alliance
with Latinus,
and
marries his
daughter.

enemy. This condition Æneas readily accepted; and complied with his engagement so faithfully, that Latinus came at length to repose an entire confidence in the Trojan; and in proof of it gave him Lavinia, his daughter and only child, in marriage, securing to him by that means the succession to the throne of Latium. Æneas, to testify his gratitude to Latinus, and affection for Lavinia, gave her name to the camp he had pitched; and instead of *Troy* called it *Lavinium*. The Trojans followed the example of their leader; and by making alliances with Latin families, became, in a short time, one and the same people with the Latins.

In the mean time Turnus, the queen's nephew, who had been brought up in the palace under the eye of Latinus, and entertained hopes of marrying Lavinia and succeeding to the throne, seeing the princess bestowed on a stranger, and all his views defeated, went

over to the Rutuli; and by stirring them up, brought on a battle between them and the Latins, in which both he and Latinus were killed. Thus Æneas, by the death of his father-in-law, and by that of a troublesome rival, came into the quiet possession of the kingdom of Latium, which he governed with great wisdom, and transmitted to his posterity.

Æneas is said to have reigned three years; during which time he established the worship of the gods of his own country, and to the religion of the Latins added that of Troy. The two Palladiums, which had been the protectors of that city, became the tutelary deities of Lavinium, and, in after ages, of the whole Roman empire. The worship of Vesta was likewise introduced by Æneas; and virgins, from her called *Vestals*, were appointed to keep a fire continually burning in honour of that goddess. Jupiter, Venus, and many other deities who had been revered in Troy, became, in all likelihood, known to the Latins by means of Æneas; which gave occasion to the poets of representing him under the character of a pious hero.

While Æneas was thus employed, the Rutuli, ancient enemies of the Latin name, entering into an alliance with Mezentius king of the Tyrrhenians, took the field with a design to drive out those new-comers, of whose power they began to conceive no small jealousy. Æneas marched out against them at the head of his Trojans and Latins. Hereupon a battle ensued, which lasted till night; when Æneas being pushed to the banks of the Numicus, which ran close by Lavinium, and forced into that river, was there drowned. The Trojans concealed his body; and pretending that he had vanished away on a sudden, made him pass for a deity among his credulous subjects, who accordingly erected a temple to him under the title of *Jupiter Indiges*.

6

His death.

Upon the death of Æneas, his son Euryleon, called also *Ascanius* and *Iulus*, ascended the throne; but as the young king did not think it advisable to venture a battle in the very beginning of his reign, with a formidable enemy, who promised himself great success from the death of Æneas, he had the prudence to confine himself within the walls of Lavinium, and to try whether he could, by an honourable treaty, put an end to so dangerous a war. But the haughty Mezentius demanding of the Latins, as one of the conditions of a peace, that they should pay him yearly, by way of tribute, all the wine produced in the territory of Latium, Ascanius rejected the proposal with the utmost indignation; and having caused all the vines throughout his dominions to be consecrated to Jupiter, and by that means put it out of his power to comply with the enemy's request, he resolved to make a vigorous sally, and try whether he could, by force of arms, bring the insulting Tyrrhenian to more reasonable terms. The main body of the enemy's army was encamped at some distance from Lavinium; but Lausus, the son of Mezentius, with the flower of their youth under his command, lay entrenched at the very gates of the city. The Trojans, who had been long accustomed to make vigorous sallies, marching out in the night, attacked the post where Lausus commanded, forced his entrenchments, and obliged the troops he had with him to save themselves by flying to the main body of the army encamped on the plain; but the unexpected arrival and

7

Succeeded
by his son
Ascanius.

overthrow.

Rome.
8
Who de-
feats the
Rutuli.

9
His kind-
ness to La-
vinia and
her son.

10
Ascanius
founds Alba
Longa.

11
Resigns the
kingdom.

12
Origin of
the name
Tiber.

overthrow of their advance-guard struck them with such terror, that, instead of stopping the flight of their companions, they fled with them, in great disorder, to the neighbouring mountains. The Latins pursued them, and in the pursuit Lausus was killed: whose death so discouraged Mezentius, that he immediately sued for peace; which was granted him, upon condition, that for the future the Tiber should be the boundary between the Latin and Hettrurian territories.

In the mean time Lavinia, who had been left with child by Æneas, entertaining a strong jealousy of the ambition of her son-in-law, retired to the woods, and was there peaceably delivered of a son, who, from his father, was named *Æneas*, and, from the place of his birth, had the surname of *Sylvius*: but as the queen's flight, who had disappeared on a sudden, raised suspicions at Lavinium prejudicial to the reputation of Ascanius, he used all possible means to remove them, caused diligent search to be made after Lavinia, calmed her fears, and prevailed upon her to return to the town with her son, whom he ever after treated as a brother. Lavinium grew every day more populous; but as it was in reality the patrimony of Lavinia, and the inheritance of her son Sylvius, Ascanius resolved to resign it to them, and build elsewhere another city for himself. This he made the place of his residence, and the capital of his new kingdom, calling it *Alba Longa*; *Alba*, from a white sow, which we are told Æneas had found in the place where it was built; and *Longa*, to distinguish it from another town of the same name in the country of the Marfi; or rather, because it extended, without having much breadth, the whole length of a lake near which it was built. It was 30 years after the building of Lavinium that Ascanius fixed his abode at Alba; and there he died, after a reign of about 38 years, 12 of which he had resided at his new settlement. He left a son, called *Iulus*; so that between him and Sylvius lay the right of succession to the Latin throne; the latter being the son, and the former the grandson, of Æneas.

The Latins not thinking it their interest to continue divided, as it were, into two states, resolved to unite Alba and Lavinium into one sovereignty; and as Sylvius was born of Lavinia the daughter of Latinus, and had thereby an undoubted title to the kingdom of his grandfather, whereas the other was but the son of a stranger, the Latins bestowed the crown on Sylvius; and, to make Iulus some amends, decreed to him the sovereign power in affairs of religion; a power which thenceforth continued in his family. Sylvius was succeeded by 13 kings of the same race, who for near 400 years reigned at Alba; but we scarce know any thing of them besides their names, and the years of their respective reigns. Æneas Sylvius died, after a reign of 29 years. His son, called also *Æneas Sylvius*, governed Latium 31 years. *Latinus Sylvius*, who succeeded him, swayed the sceptre for the space of 51 years — Alba reigned 39; Capetus, by Livy named *Atys*, 26; Capis, 28; and Capetus, 13. Tiberinus, who succeeded him, engaged in a war which proved fatal to him; for in a battle which was fought on the banks of the Albula, he was forced into that river and drowned. From him the river took the name of *Tiber*, which it has borne ever since. Agrippa succeeded Tiberinus after a reign of eight years; and left the throne, which

he had held 41 years, to Alladius; who reigned 19, and was succeeded by Aventinus, who left his name to the hill Aventinus, where he was interred. Procas, who succeeded him, and reigned 23 years, was the father of Numitor and Amulius; and at his death bequeathed the throne to his elder son Numitor. But Amulius, who surpassed his brother in courage and understanding, drove him from the throne; and to secure it to himself, murdered Ægeus, Numitor's only son, and consecrated his daughter Rhea Sylvia to the worship of Vesta, by which she was obliged to perpetual virginity. But this precaution proved ineffectual; for as the Vestal was going to a neighbouring spring to fetch water for the performance of a sacrifice to Mars, she was met and ravished by a man in a military habit, like that in which the god Mars is represented. Some authors think that this counterfeit Mars was a lover come thither by her appointment; others charge Amulius himself with using this violence to his niece, not so much to gratify his lust, as to have a pretence to destroy her. — For ever after he caused her to be carefully watched, till she was delivered of two sons; and then exaggerating her crime in an assembly of the people, he prevailed upon them to sentence her to death, and to condemn the fruit of her criminal amour to be thrown into the Tiber. The sentence against Rhea was, according to some authors, changed by Amulius, at the request of his daughter Antho, into perpetual confinement, but executed against the twins; who being laid in a wooden trough, and carried to the foot of mount Palatine, were there turned adrift on the Tiber, which at that time overflowed its banks. But the wind and stream proved both so favourable, that at the fall of the water the two infants were left safe on the strand, and were there happily found by Faustulus, the chief of the king's shepherds, and suckled by his wife Acca Laurentia, who for her disorderly life was called *Lupa*; and this probably gave rise to the fabulous miracle of their being nursed by a wolf.

As Faustulus was probably well acquainted with the birth of the twins, he took more than ordinary care of their education, and sent them to Gabii to be instructed there in Greek literature. As they grew up, they appeared to have something great in their mien and air which commanded respect; and the ascendant which they assumed over the other shepherds made them dreaded in the forests, where they exercised a sort of empire. A quarrel happening between the herdsmen of Amulius and those of Numitor, the two brothers took the part of the former against the latter; and some blood being shed in the fray, the adverse party, to be revenged on *Romulus* and *Remus* (for so the twins were called), on the festival of Lupercalia, surprised Remus, and carried him before Numitor, to be punished according to his deserts. But Numitor feeling himself touched in the prisoner's favour, asked him where he was born, and who were his parents. His answer immediately struck Numitor with a lively remembrance of his two grandsons; their age, which was about 18 years, agreed with the time when the two infants were exposed upon the Tiber; and there needed no more to change his anger into tenderness.

In the mean time Romulus, eager to rescue his brother, and pursue those who had carried him off, was preparing to be revenged on them; but Faustulus dis-

Rome.

13
Adventure
of Rhea
Sylvia.

14
Of Romu-
lus and Re-
mus.

Rome.

suaded him from it; and on that occasion, disclosing to him his birth, awakened in his breast sentiments worthy of his extraction. He resolved, at all adventures, to attempt the delivering of his mother and grandfather from oppression. With this view he assembled the country people, over whom he had assumed a kind of sovereignty, and engaged them to come to the city on an appointed day, and enter it by different gates, provided with arms, which they were to conceal. While Romulus was thus disposing every thing for the execution of his design, Numitor made the same discovery to Remus concerning his parents, and the oppressions they groaned under; which so fired him, that he was ready to embark in any enterprise. But Numitor took care to moderate the transports of his grandson, and only desired him to acquaint his brother with what he had heard from him, and to send him to his house. Romulus soon came, and was followed by Faustulus, who took with him the trough or skiff in which the twins had been exposed, to show it to Numitor: but, as the shepherd betrayed an air of concern and earnestness in his looks, he was stopped at the gate of the city, led before Amulius, and examined concerning his burden. It was easily known by its make and inscription, which was still legible; and therefore Faustulus owned what it was, and confessed that the twins were living; but, in order to gain time, pretended that they were feeding flocks in a remote desert. In the mean time, the usurper's death being resolved on, Remus undertook to raise the city, and Romulus to invest the king's palace. The country people came at the time appointed, and formed themselves into companies each consisting of 100 men. They had no other ensigns but bundles of hay hanging upon long poles, which the Latins at that time called *manipuli*; and hence came the name of *manipulares*, originally given to troops raised in the country. With this tumultuous army Romulus beset the avenues of the palace, forced the guard, and having killed the tyrant, after he had reigned 42 years, restored his grandfather Numitor to the throne.

25
They resolve to found a colony.

Affairs being thus settled at Alba, the two brothers, by the advice of Numitor, undertook the founding of a new colony. The king bestowed on them those lands near the Tiber where they had been brought up, supplied them with all manner of instruments for breaking up ground, with slaves, and beasts of burden, and granted full liberty to his subjects to join them. Hereupon most of the Trojans, of whom there still remained 50 families in Augustus's time, chose to follow the fortune of Romulus and Remus, as did also the inhabitants of Pallantium and Saturnia, two small towns. For the more speedy carrying on of the work, it was thought proper to divide those who were to be employed in the building of the city into two companies, one under the command of Romulus, the other of Remus; but this division, which was designed purely with a view to the public welfare, and that the two parties might work by way of emulation, gave birth to two factions, and produced a jealousy between the two brothers, which broke out when they came to choose a place for the building of their new city; for Remus was for the Aventine, and Romulus for the Palatine mount. Upon which, the matter being referred to their grandfather, he advised the contending parties to have recourse to the gods, and to

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put an end to the dispute by augury, to which he was himself greatly addicted. The day appointed for the ceremony being come, the brothers posted themselves each upon his hill; and it was agreed, that whoever should see the first flight, or the greatest number, of vultures, should gain his cause. After the two rivals had waited some time for the appearance of a favourable omen, Romulus, before any had appeared, sent to acquaint his brother that he had seen some vultures; but Remus, having actually seen six, while his brother's messengers were yet on their way, hastened, on their arrival, to mount Palatine, to examine the truth of what they had told him. He had no sooner got thither, than by an unexpected good fortune twelve vultures appeared to Romulus. These he immediately showed to his brother; and, transported with joy, desired him to judge himself of the truth of what his messengers had told him. However, Remus discovered the deceit; and, being told that Romulus had not seen the twelve vultures till after he had seen six, he insisted on the time of his seeing them, and the other on the number of birds he had seen. This widened the breach between the two brothers; and, their parties being divided, while each man espoused the cause of his leader, the dispute grew so warm, that, from words they came at length to blows. The shepherd Faustulus, who was equally dear to both the brothers, endeavouring to part the combatants, was by an unknown hand laid dead on the spot. Some writers tell us, that Remus likewise lost his life in the fray; but the greater number place his death later, and say that he was killed by one Fabius, for having, in derision, leaped over the wall of the new city: but Livy says, the more common report was, that Remus fell by the hand of his brother.

16
Death of Remus.

Romulus, being now head of the colony, by having got the better of his brother's party in the late engagement, applied his thoughts wholly to the building of the city, which he proposed to call after his own name. He chose mount Palatine for its situation, and performed all those ceremonies which the superstition of the Hetrurians had introduced. He first offered sacrifices to the gods, and ordered all the people to do the same: and from that time decreed, that eagles should be the auspices of his new colony. After this, great fires were kindled before their tents, and all the people leaped through the flames to purify themselves. When this ceremony was over, they dug a trench round the spot where the assemblies of the people were afterwards held, and threw into it the first-fruits of whatever they were allowed to make use of for food: every man of the colony was ordered to cast into the same trench an handful of earth, brought either from his own or some neighbouring country. The trench they called *Mundus*, that is, *the world*, and made it the centre round which the city was to be built. Then Romulus, yoking an ox and a cow to a plough, the coulter whereof was brass, marked out, by a deep furrow, the whole compass of the city. These two animals, the symbols of marriage, by which cities are peopled, were afterwards slain upon the altar. All the people followed the plough, throwing inwards the clods of earth which the ploughshare sometimes turned outwards. Wherever a gate was to be made, the plough was lifted up, and carried; and hence came the Latin word *porta*, "a gate," derived

17
Foundation of Rome.

T t

ived

^{Rome.} rived from the verb *portare*, "to carry." As mount Palatine stood by itself, the whole was inclosed within the line made by the plough, which formed almost the figure of a square; whence, by Dionysius Halicarnassensis, it is called *Roma Quadrata*.

As to the exact year of the foundation of Rome, there is a great disagreement among historians and chronologers. Fabius Pictor, the most ancient of all the Roman writers, places it in the end of the seventh Olympiad; that is, according to the computation of Usher, in the year of the world 3256, of the flood 1600, and 748 before the Christian æra. The Romans, if we may so call them, began to build, as Plutarch and others inform us, on the 21st of April; which day was then consecrated to Pales, goddess of the shepherds; whence the festival of Pales, and that of the foundation of the city, were afterwards jointly celebrated at Rome.

¹⁸
At first but
a poor vil-
lage.

When Rome had received the utmost perfection which its poor and rude founder could give it, it consisted of about 1000 houses, or rather huts; and was properly speaking a beggarly village, whereof the principal inhabitants followed the plough, being obliged to cultivate with their own hands the ungrateful soil of a barren country which they had shared among themselves. Even the walls of Romulus's palace were made of rushes, and covered with thatch. As every one had chosen his ground to build upon, without any regard to the regularity and beauty of the whole, the streets, if we may so call them, were both crooked and narrow. In short, Rome, till it was rebuilt after the burning of it by the Gauls, was rather a disorderly heap of huts, than a city built with any regularity or order.

¹⁹
Romulus
elected
king.

As soon as the building of the city was finished, Romulus assembled the people, and desired them to choose what kind of government they would obey. At that time monarchy was the unanimous voice of the Romans, and Romulus was elected king. Before he ascended the throne, however, he consulted the will of the gods by augury; and having received a favourable answer, it thence became an established custom to have recourse to augury before the raising any one to the dignity of king, priest, or any public employment. After this he applied himself to the establishment of good order and subordination among his subjects. He put on a habit of distinction for himself, appointed 12 lictors to attend him as guards, divided his subjects, who at this time consisted only of 33,000 men, into *curiæ*, *decuriæ*, *patricians*, *plebeians*, *patrons*, *clients*, &c. for an account of which, see these articles as they occur in the order of the alphabet. After this he formed a senate consisting of 100 persons, chosen from among the patricians; and a guard of 300 young men called *celeræ*, who attended the king, and fought either on foot or on horseback as occasion required. The king's office at home was to take care of religious affairs, to be the guardian of laws and customs; to decide the weightier causes between man and man, referring those of smaller moment to the senate; to call together the senators, and assemble the people, first delivering his own opinion concerning the affair he proposed, and then ratifying by his consent what was agreed on by the majority. Abroad, and in the time of war, he was to command the army with absolute authority, and to take care of the public money. The senate were not only to be judges in matters of small

importance, but to debate and resolve upon such public affairs as the king proposed, and to determine them by a plurality of voices. The people were allowed to create magistrates, enact laws, and resolve upon any war which the king proposed; but in all these things the consent of the senate was necessary.

Romulus next proceeded to settle the religious affairs of his people. Many of the Trojan and Phrygian deities were added to those whom the Aborigines or Italian natives already worshipped. He chose priests, instituted festivals, and laid the foundation of a regular system of religion; after which, as his colony was still thinly peopled, he opened an asylum for fugitive slaves, homicides, outlaws, and debtors. These, however, he did not at first receive within the walls, but appointed for their habitation the hill Saturnius called afterwards *Capitolinus*, on which he erected a temple to a divinity of his own invention, whom he named the *Asylean god*, under whose protection all criminals were to live securely. But afterwards, when the city was enlarged, the asylum was inclosed within the walls, and those who who dwelt in it included among the citizens of Rome.

When Romulus had thus settled every thing relating to his new colony, it was found that a supply of wo-^{Rape of the} men was wanting to perpetuate its duration. This oc-^{Sabine wo-}casioned some difficulty; for the neighbouring nations refused to give their daughters in marriage to such a crew of vagabonds as had settled in Rome; wherefore Romulus at last resolved on the following expedient. By the advice of his grandfather Numitor, and with the consent of the senate, he proclaimed a solemn feast and public games in honour of the Equestrian Neptune called *Consus*. This occasioned a great concourse of people, who flocked from the adjacent parts to behold these pompous shows, together with the new city. But, in the midst of the solemnity, the Romans, rushing in with their swords drawn, seized all the young women, to the number of 683, for whom Romulus chose husbands. Among all those who were thus seized, only one married woman, named *Herfília*, was found; and Romulus is said to have kept her for himself.

This violence soon brought on a war with the neigh-²¹bouring nations. Acron king of Cænina, a city on Occasions war with the neigh-^{bouring na-}the confines of Latium, having entered into a league with the inhabitants of Crustumium and Antemnæ, invaded the Roman territories. Romulus marched against them without delay, defeated the confederate army, killed their king in single combat, decreed himself a triumph, and consecrated the spoils of Acron to Jupiter Feretrius, under the name of *Opima Spolia*. The city of Cænina was razed to the ground, and the inhabitants transplanted to Rome, where they were admitted to the privileges of citizens. The king then marched with one legion (consisting at this time of 3000 foot and 300 horse) against the Crustumini and Antemnates, both of whom he defeated in battle, and transplanted the inhabitants to Rome; which being incapable of holding such a number, Romulus took in the hill Saturnius^{Rome en-} above-mentioned, on the top of which he built a cita-^{larged.}del, committing the care of it to a noble Roman named *Tarpeius*. The citadel was surrounded on all sides with ramparts and towers, which equally commanded the city and country. From the foot of the hill Saturnius a wall was carried on quite to the Tiber, and a gate opened

Rome. opened in it named *Carmentalis*, from Carmenta the mother of Evander, who either lived there, or had some chapel or altar erected to her.

23
Invasion of
the Sabines.

24
The citadel
besieged.

25
Peace con-
cluded, and
the two na-
tions uni-
ted.

Romulus had now become so formidable to his neighbours, and had so well established his reputation for clemency, that several cities of Hetruria voluntarily submitted to him. Coelius, an Hetrurian general, led the troops under his command to Rome, and settled on an hill near the city, which from him took the name of *Mount Coelius*. The Sabines, however, not in the least dismayed at this increase of the Roman forces, sent a deputation to Romulus, demanding restitution of the young women who had been carried off; and, upon his refusal, marched to Rome with an army of 25,000 foot and 1000 horse, under the command of their king Titus Tatius. Romulus, having received supplies from Numitor and from Hetruria, likewise took the field, with 20,000 foot and 800 horse, with whom he seized an advantageous post, and fortified himself so strongly, that he could not be attacked. The Sabine monarch, perceiving the military skill of Romulus, began to be apprehensive of the event; but was extricated out of his difficulties by the treachery of Tarpeia daughter to the governor of the citadel, who agreed to betray that important fortress to the enemy, on condition of being rewarded with the bracelets which the Sabines wore on their left arms. But when once they became masters of this important place, they are said to have crushed Tarpeia under the weight of their bucklers, pretending that thus they discharged their promise, as they wore their bucklers also on their left arms. The possession of the citadel enabled the Sabines to carry on the war with more success; but, at last, in a general engagement, they had the misfortune to be driven back into the citadel, whither they were pursued by the Romans, who expected to have retaken that important post; but the enemy, rolling down great stones from the top of the hill, wounded Romulus on the head, so that he was carried insensible out of the field of battle, while, in the mean time, his troops were repulsed, and pursued to the very gates of Rome. However, the king soon recovering himself, encouraged his routed troops, and drove the enemy back into the citadel. But while the two nations were thus fiercely contending, the women, for whose cause the war had been commenced, undertook the office of mediators; and having obtained leave from the senate, marched in a body to the camp of the Sabines, where they pleaded the cause of their husbands so effectually, that a treaty of union between the two nations was set on foot, and a peace was at last concluded, on the following terms. 1. That the two kings should reside and reign jointly at Rome. 2. That the city should still, from Romulus, be called *Rome*; but the inhabitants *Quirites*, a name till then peculiar to the Sabines. 3. That the two nations should become one; and that the Sabines should be made free in Rome, and enjoy all the privileges of Roman citizens. As Rome was chiefly indebted for this increase of her power and splendor to the Sabine women, honourable privileges and marks of distinction were allowed them. Every one was commanded to give way to them; in capital causes they were exempted from the jurisdiction of the ordinary judges; and their children were allowed to wear a golden ball hanging from their necks,

and a particular kind of robe called *prætecta*, to distinguish them from the vulgar.

Rome.

The two kings reigned with great harmony for the space of five years; during which time the only military exploit they accomplished was the reduction of the city of Cameria, at a small distance from Rome. Four thousand of the Camerini were transplanted to Rome, and a Roman colony sent to repeople Cameria; soon after which the Sabine king was murdered by the Lavinians, on account of his granting protection to some of his friends who had ravaged their territories. The Lavinians, fearing the resentment of Romulus, delivered up the assassins into his hands; but he sent them back unpunished, which gave occasion to suspect that he was not displeased with the death of his colleague.

26
Tatius murdered.

Soon after the death of Tatius, Rome was afflicted with famine and pestilence, which encouraged the Camerini to revolt; but Romulus marching against them suddenly, defeated them with the loss of 6000 men. After which he attacked the Fidenates, whose city stood about five miles from Rome, took their capital, and made it a Roman colony. This drew upon him the resentment of the Veientes, a powerful nation in the neighbourhood, who claimed Fidenæ as within their jurisdiction; but their forces being defeated in two engagements, and a great number of them taken prisoners, they were obliged to sue for peace. Romulus granted them a truce for 100 years, on condition that they delivered to him seven small towns on the Tiber, together with some salt-pits near the mouth of that river, and sent 50 of their chief citizens as hostages to Rome. The prisoners taken in this war were all sold for slaves.

The remaining part of the life of Romulus was spent in making laws for the good of his people; but towards the latter end of his reign, being elated with success, he began to enlarge the bounds formerly set to his prerogative, and to behave in an arbitrary manner. He paid no longer any regard to the voice of the senate, but assembled them only for form's sake to ratify his commands. The senate therefore conspired to destroy him, and accomplished their purpose while he was reviewing his troops. A violent storm of hail and thunder dispersed the army; and the senators taking this opportunity, when they were left alone with the king, instantly killed him, and conveyed his body out of sight. Some writers tell us, that, the better to conceal the fact, they cut his body in pieces, each of them carrying away a part under his robe; after which they told the multitude, that their king was on a sudden surrounded by flame, and snatched up into heaven. This stratagem, however, did not satisfy the soldiery, and violent disturbances were about to ensue, when Julius Proculus, a senator of great distinction, having assembled the Curia, told them that Romulus had appeared to him, and enjoined him to acquaint the people, that their king was returned to the gods from whom he originally came, but that he would continue to be propitious to them under the name of *Quirinus*; and to the truth of this story Julius swore.

27
And like-
wise Romu-
lus.

Romulus reigned, according to the common computation, 37 years: but some historians reduce the length of his reign to little more than 17; it being very unlikely, as they observe, that a prince of such an active disposition should perform nothing worthy of

Rome.

28
His death
followed by
an interreg-
num.

record during a period of 20 years. Be this as it will, however, the death of Romulus was followed by an interregnum, during which the senators, to prevent anarchy and confusion, took the government into their own hands. Tatius added another hundred to that body; and these 200 senators divided themselves into decuries or tens. These decuries drew lots which should govern first; and the decury to whose lot it fell enjoyed the supreme authority for five days; yet in such a manner, that one person only of the governing decury had the ensigns of sovereignty at a time. To these another decury succeeded, each of them sitting on the throne in his turn, &c. But the people soon growing weary of such frequent change of masters, obliged the senate to resolve on the election of a king. The senate referred the election to the people, and the people to the senate, who at last undertook the task. Some difficulties, however, occurred: the Romans did not choose to be subject to a Sabine; and the Sabines, as they had been subject to Romulus after the death of Tatius, insisted that the king should be chosen out of their nation. At last it was agreed, that the king should be a Sabine, but that the Romans should make the choice.

29
Numa
Pompilius
the second
king.

In consequence of this determination, the Romans elected Numa Pompilius, an austere philosopher, who had married Tatia, the daughter of Tatius the late king. After the death of his wife, he gave himself entirely up to philosophy and superstition, wandering from solitude to solitude, in search of sacred woods and fountains, which gave the people a great opinion of his sanctity. The philosopher at first rejected the offer of the kingdom; but being at last prevailed upon, he set out for Rome, where he was received with loud acclamations, and had his election unanimously confirmed by the senate.

The reign of Numa is by no means memorable for battles or conquests. He was averse to war; and made it his study to soften the manners of the Romans, rather than to exalt them to superiority over their neighbours. He dismissed the celeres, encouraged agriculture, and divided the citizens into distinct bodies of tradesmen. This last measure he took on purpose to abolish the distinction between Romans and Sabines, which had hitherto rent the city into two factions; and this effectually answered his end: for now all of each particular profession, whether Romans or Sabines, were obliged to associate together, and had each their respective courts and privileges. In this division the musicians held the first rank, because they were employed in the offices of religion. The goldsmiths, carpenters, curriers, dyers, tailors, &c. formed also distinct communities; and were allowed to make by-laws among themselves, to have their own festivals, particular sacrifices, &c.

Though Numa himself is said by Plutarch to have had pretty just notions of the Supreme Being, he nevertheless added innumerable superstitions to those he found in Rome. He divided the ministers of religion into eight classes, appointing to each their office with the greatest precision; he erected a temple to Janus, the symbol of prudence, which was to remain open in time of war, and to be shut in time of peace. Another temple was erected to *Bona Fides*; and he invented a new kind of deities called *Dii Termini*, or

Rome.

boundaries, which he caused to be placed on the borders of the Roman state, and of each man's particular lands.—The last reformation which Numa undertook, was that of the kalendar. Romulus had divided his year into ten months, which, according to Plutarch, had no certain or equal number of days; some consisting of 20, some of 35, &c. However, by other historians, we are informed that he allotted to March, May, Quintilis, and October, 31 days; to April, June, Sextilis, November, and December 30; making in all 304 days. But Numa being better acquainted with the celestial motions, added to these the two months of January and February. To compose these two months he added 50 days to the 304; and thus made the year answer to the course of the moon. He then took six more from the months that had even days; and added one day merely out of superstition, that the year might prove fortunate; for the pagans looked upon even numbers as unlucky, but imagined odd numbers to be fortunate. However, he could make out no more than 28 for February, and therefore that month was always reckoned unlucky among the Romans. Besides this, he observed the difference between the solar and lunar year to be 11 days; and to remedy the inequality, he added an intercalary month named *Mercedinus* or *Mercedonius*, of 22 days every two years: but as he knew also that the solar year consisted of 365 days 6 hours, he ordered that every fourth year the month *Mercedinus* should consist of 23 days. The care of these intercalations was left to the priests, who left out or put in the intercalary day or month as they imagined it to be lucky or unlucky; and by that means created such confusion, that the festivals came in process of time to be kept at a season quite opposite to what they had been formerly.

These are all the remarkable transactions of the reign of Numa, which is said to have continued 43 years; though some think that its duration could not be above 15 or 16. His death was followed by a short interregnum; after which Tullus Hostilius, the son or grandson of the famous Herfilius, was unanimously chosen king. Being of a bold and fiery temper, he did not long continue to imitate his peaceful predecessor. The Albans, indeed, soon gave him an opportunity of exercising his martial disposition. Cælius, or, as he is called by Livy, *Cluilius*, who was at the head of the Alban republic, jealous of the growing greatness of Rome, privately commissioned some of the most indigent of his subjects to waste the Roman territory; in consequence of which, a Roman army entered the territories of Alba, engaged the robbers, killed many, and took a great number prisoners. A war soon commenced, in consequence of this, between the two nations; but when the armies came in sight of each other, their ardour cooled, neither of them seeming inclined to come to an engagement. This inaction raised a great discontent in the Alban army against Cluilius; insomuch that he came to a resolution of giving battle to the Romans next morning, or of storming their trenches if they should decline it. Next morning, however, he was found dead in his bed; after which the Albans chose in his stead one Mettus Fuffetius, a man remarkable for his hatred to the Roman name, as Cluilius had been before him. Fuffetius, however continued in the same

30
Succeeded
by Tullus
Hostilius.

31
His war
with the
Albans.

Rome. state of inactivity as his predecessor, until he received certain intelligence that the Veientes and Fidenates had resolved to destroy both Romans and Albans when they should be weakened by a battle. Fuffetius then resolved to come to an accommodation with the Romans; and, having obtained a conference with Tullus, both seemed equally desirous of avoiding the calamities of war. But, in order to establish the peace on the most perfect foundation, Tullus proposed that all, or at least the chief families in Alba, should remove to Rome; or, in case they were unwilling to leave their native city, that one common council should be established to govern both cities, under the direction of one of the two sovereigns. Fuffetius took aside those who attended him, to consult with them about this proposal; but they, though willing to come to an accommodation with Rome, absolutely refused to leave Alba. The only difficulty remaining, then, was to settle which city should have the superiority; and, as this could not be determined by argument, Tullus proposed to determine it by single combat betwixt himself and Fuffetius. This proposal, however, the Alban general thought proper to decline; and it was at last agreed, that three champions should be chosen out of each camp to decide the difference. This produced the famous combat between the Horatii and Curiatii, by which the sovereignty was decided in favour of Rome. See HORATII.

Tullus now resolved to call the Fidenates to an account for their treacherous behaviour during the war with Alba, and therefore cited them to appear before the senate; but they, conscious of their guilt, refused to appear, and took up arms in conjunction with the Veientes. Fuffetius, in obedience to the orders of Tullus, joined him with the Alban troops; but the day before the battle, he acquainted the principal officers with his design, which was to stand neuter till fortune had declared for one side, and then to join with the conqueror. This design being approved, Fuffetius, during the engagement, retired with his forces to a neighbouring eminence. Tullus perceived his treachery; but dissembling his uneasiness, told his men that Fuffetius had possessed himself of that hill by his order, and that he was from thence to rush down upon the enemy. The Veientes, in the mean time, who had expected that Fuffetius was to join them, were dismayed, and the Romans obtained the victory. After the battle, Tullus returned privately to Rome in the night; and having consulted with the senate about the treachery of Fuffetius, returned to the camp by break of day. He then detached Horatius, who had conquered the three Curiatii, with a chosen body of horse and foot, to demolish Alba, as had been concerted at Rome. In the mean time, he commanded both the Roman and Alban troops to attend him unarmed, but gave private orders to the Romans to bring their swords concealed under their garments. When they were assembled, he laid open the treachery of Fuffetius, and ordered him to be torn in pieces by horses. His accomplices were all put to the sword; and the inhabitants of Alba carried to Rome, where they were admitted to the privileges of citizens, and some of them even admitted to the senate.

Tullus now turned his arms against Fidenæ, which he again reduced under the Roman yoke; and took

Medulia, a strong city of the Latins; after which he waged a successful war with the Sabines, whose union with the Romans seems to have ceased with the time of Numa. This was the last of his martial exploits; after which we hear no more of him, but that he became extremely superstitious in his advanced years, giving ear to many foolish stories, as that it rained stones, that miraculous voices were heard from heaven, &c. and for this he appointed nine days expiatory sacrifices; whence it became a custom to appoint nine days to appease the wrath of the gods as often as men were alarmed with prodigies. As to the manner of his death authors are not agreed. Some tell us that he was killed by lightning, together with his wife, Tullus, children, and his whole family; while others are of opinion that he was murdered with his wife and children by Ancus Martius who succeeded him. He died after a reign of 33 years, leaving the city greatly increased, but the dominions much the same as they had been in the time of Romulus.

After a short interregnum, Ancus Martius, the grandson of Numa by his daughter Pompilia, and Marcus his relation, was unanimously chosen by the people and senate. Though naturally inclined to war, he began his reign with attempting to restore the ceremonies of Numa, which had been neglected under Tullus Hostilius. He endeavoured also to draw the attention of his people to husbandry and the peaceful arts; advising them to lay aside all sorts of violence, and to return to their former employments. This gained him the affections of his subjects, but brought upon him the contempt of the neighbouring nations. The Latins, pretending that their treaty with Rome was expired, made inroads into the Roman territories. Ancus, after using the ceremonies directed by Numa, took the field with an army consisting entirely of new levied troops, and reduced the cities of Politorium, Tilleria, and Ficana, transplanting the inhabitants to Rome. A new colony of Latins repeopled Politorium; but Ancus retook the place next year, and entirely demolished it. He then laid siege to Medulia; which, though it had been ruined by Tullus Hostilius, was now stronger than ever. It submitted after a siege of four years, when Ancus found himself obliged to undertake a second expedition against Ficana, which he had before reduced, as we have already related; and it was not without the utmost difficulty that he reduced it a second time. After this he defeated the Latins in a pitched battle; vanquished the Fidenates, Veientes, and Sabines; and having taken in the hill Janiculum to be included within the walls, and built the port of Ostia, he died in the 24th year of his reign.

Ancus Martius left two sons behind him, one an infant, and the other about 15 years of age. Both of these he put under the tuition of Tarquin, the son of a rich merchant in Corinth, who had fled from that city to secure his wealth from Cypselus tyrant of the place. He settled in Tarquinii, one of the principal cities in Etruria; but finding that he could not there attain to any of the principal posts in the city on account of his foreign extraction, he removed to Rome, where he had been gradually raised to the rank of patrician and senator. The death of Ancus Martius gave him an opportunity of assuming the regal dignity, and setting aside his pupils; and in the beginning of his reign he

Rome

33
Death of
Tullus,
who is suc-
ceeded by
Ancus
Martius.

34
His warlike
exploits
and death.

35
His sons
supplanted
by Tarquin

32
Alba de-
molished,
and the in-
habitants
transferred
to Rome.

took

Rome.

took care to strengthen his party in the senate by adding another hundred to that body. These were called *senatores minorum gentium*, because they were chosen out of the plebeians; however, they had the same authority in the senate as the others, and their children were called *patricians*.

36
Tarquin's
success in
war.

Tarquin was not inferior to any of his predecessors either in his inclination or abilities to carry on a war. As soon as he ascended the throne, he recommenced hostilities with the Latins; from whom he took the cities of Apiolæ, Crustuminum, Nomentum, and Collatia. The inhabitants of Apiolæ were sold for slaves; but those of Crustuminum and Nomentum, who had submitted after their revolt, were treated with great clemency. The inhabitants of Collatia were disarmed, and obliged to pay a large sum of money; the sovereignty of it, in the mean time, being given to Egerius, the son of Arunx, Tarquin's brother; from whence he took the name of *Collatinus*, which he transmitted to his posterity. Corniculum, another city of Latium, was taken by storm, and reduced to ashes. This progress having greatly alarmed the Latins, several of them joined their forces in order to oppose such a formidable enemy; but being defeated in a bloody battle near Fidenæ, they were obliged to enter into an alliance with Rome; upon which the Latins having held a national conference, entered into a league with the Hetrurians, and again took the field with a very numerous army. But Tarquin, having defeated the confederate armies in two very bloody battles, obliged the Latin cities to submit to a kind of dependence on Rome; and, having entered the city in triumph, built the circus maximus with the spoils which he had taken from the enemy.

The war with the Latins was scarce ended, when another commenced with Hetruria. This was accounted the most powerful nation in Italy, and was at that time divided into 12 tribes or lucomonies. These appointed a national assembly, in which it was decreed that the whole force of Hetruria should be employed against Tarquin; and if any city presumed only to stand neuter, it should be for ever cut off from the national alliance. Thus a great army was raised, with which they ravaged the Roman territory, and took Fidenæ by the treachery of some of its inhabitants. Tarquin, not being in a condition to oppose them at first, was obliged to submit to the loss occasioned by their ravages for a whole year; after which he took the field with all the forces he could raise. The Roman army was divided into two bodies, one under the king himself, the other commanded by his nephew Collatinus. The latter, having divided his forces in order to plunder the country, was defeated; but Tarquin, in two engagements, vanquished the army which opposed him. He then marched against Fidenæ, where he gained a third battle; after which he took the city. Such of the citizens as were suspected to have been concerned in betraying it to the enemy were whipped to death; the rest were sent into banishment, and their lands divided by lot among the Roman soldiers. Tarquin now hastened to oppose the new army of the Hetrurians before their forces could be properly collected; and having come up with them at Eretum, a place about 10 miles from Rome, defeated them with great slaughter, for which victory he was decreed a

triumph by the senate; while the enemy, disheartened by so many misfortunes, were glad to sue for peace; which Tarquin readily granted, upon the sole condition of their owning his superiority over them. In compliance with this, the Hetrurians sent him all the ensigns of royalty which were in use among them, viz. a crown of gold, a throne of ivory, a sceptre with an eagle on the top of it, a tunic embroidered with gold, and adorned with figures of palm-branches, together with a purple robe enriched with flowers of several colours. Tarquin, however, would not wear these magnificent ornaments till such time as the senate and people had consented to it by an express law. He then applied the regalia to the decoration of his triumph, and never afterwards laid them aside. In this triumph he appeared in a gilt chariot, drawn by four horses, clothed in a purple robe, and a tunic embroidered with gold, a crown on his head, and a sceptre in his hand, attended by 12 lictors with their axes and fasces.

Tarquin, having now obtained some respite from war, applied himself to the beautifying and ornamenting the city. He built the walls of Rome with hewn stone, and erected those famous common sewers which have deservedly been accounted one of the wonders of the world. Rome at this time contained four hills within its compass, viz. the Palatinus, Tarpeius, Quirinalis, and Cælius. In the valleys between these hills, the rain-water and springs uniting, formed great pools which laid under water the streets and public places. The mud likewise made the way impassable, infected the air, and rendered the city unhealthy. Tarquin undertook to free the city from this nuisance, by conveying off these waters by subterraneous channels into the Tiber. In doing this, it was necessary to cut thro' hills and rocks a channel large enough for a navigable stream, and covered with arches strong enough to bear the weight of houses, which were frequently built upon them, and stood as firm as on the most solid foundations. All these arches were made of hard stone, and neither trouble nor expence were spared to make the work durable. Their height and breadth were so considerable, that a cart loaded with hay could easily pass through them under ground. The expence of constructing these sewers was never so thoroughly understood as when it became necessary to repair them; for then the censors gave no less than 1000 talents to the person appointed for this purpose.

Besides these great works, Tarquin adorned the forum, surrounding it with galleries in which were shops for tradesmen, and building temples in it for the youth of both sexes, and halls for the administration of public justice. He next engaged in a war with the Sabines, on pretence that they had assisted the Hetrurians. Both armies took the field, and came to an engagement on the confines of Sabinia, without any considerable advantage on either side; neither was any thing of consequence done during the whole campaign. Tarquin then, considering with himself that the Roman forces were very deficient in cavalry, resolved to add some new bodies of knights to those already instituted by Romulus. But this project met with great opposition from the superstitious augurs, as the original division of horse into three bodies had been determined by auguries; and Aetius Nævius, the chief of

Rome.

37
Ensigns of
royalty sent
him by the
Hetrurians.

38
Builds the
common
sewers, and
ornaments
the city.

Rome. the diviners at that time, violently opposed the king's will. On this Tarquin, desirous to expose the deceit of these people, summoned Nævius before an assembly of the people, and desired him to show a specimen of his art, by telling the king if what he thought of at that time could be done or not. The augur replied, after consulting his birds, that the thing was very possible. On which Tarquin told him, that he had been thinking whether it was possible to cut a flint with a razor, pulling at the same time a razor and flint from below his robe. This set the people a-laughing; but Nævius gravely desiring the king to try it, he was surprised to find that the flint yielded to the razor; and that with so much ease as to draw blood from his hand. The people testified their surprise by loud acclamations, and Tarquin himself continued to have a great veneration for augurs ever after. A statue of brass was erected to the memory of Nævius, which continued till the time of Augustus; the razor and flint were buried near it, under an altar, at which witnesses were afterwards sworn in civil causes.

39
Adventure
of Nævius
the augur.

40
Assassinated
by the sons
of Ancus
Martius.

This adventure, whatever was the truth of it, caused Tarquin to abandon his design of increasing the number of bodies of horse, and content himself with augmenting the number in each body. He then renewed the war with the Sabines, ravaged their country, defeated them in three pitched battles, obliging them at last to submit to him and put him in possession of their country. In the decline of life he employed himself in further decorating the city, building temples, &c. He was assassinated in his palace, in the 80th year of his age, by the sons of Ancus Martius, whom he had originally deprived of the kingdom.

41
Servius
Tullus
succeeds.

After the death of Tarquin I. his wife Tanaquil preserved the kingdom to her son-in-law Servius Tullius, by artfully giving out that the king was only stunned, and would soon recover; upon which the sons of Ancus went voluntarily into banishment. The second day after his decease, Servius Tullius heard causes from the throne in the royal robes and attended by the licitors; but as he pretended only to supply the king's place till he should recover, and thought it incumbent on him to revenge the wicked attempt upon his life, he summoned the sons of Ancus to appear before his tribunal; and on their non-appearance, caused them to be declared infamous, and their estates to be confiscated. After he had thus managed matters for some time in such a manner as to engage the affections of the people, the death of Tarquin was published as a thing that had newly happened, and Servius Tullius assumed the ensigns of royalty, having none to dispute the honour with him.

The new king showed himself every way worthy of the throne. No sooner were the Hettrurians informed of Tarquin's death, than they shook off the yoke; but Servius quickly reduced them to obedience, depriving them of their lands, which he shared among the poor Roman citizens who had none. For this he was decreed a triumph by the people, in spite of the opposition of the senate, who could never be brought to approve of his election to the kingdom, though he was soon after legally chosen by the tribes.

After Servius had obtained the sanction of the popular voice, he marched a second time against the revolted Hettrurians; and having again vanquished them,

was decreed another triumph. He then applied himself to the enlarging and adorning the city. To the hills Palatinus, Tarpeius, Quirinalis, Coelius, and Aventinus, he added the Esquilinus and Viminalis, fixing his own palace on the Esquilinus, in order to draw inhabitants thither. He likewise added a fourth tribe, which he called *Tribus Esquilina*, to those instituted by Romulus. He divided also the whole Roman territory into distinct tribes, commanding that there should be at least one place of refuge in each tribe, situated on a rising ground, and strong enough to secure the effects of the peasants in case of a sudden alarm. These strong-holds he called *pagi*, that is, "villages;" and commanded that each of them should have their peculiar temple, tutelary god, and magistrates. Each of them had likewise their peculiar festival, called *paganalia*; when every person was to pay into the hands of those who presided at the sacrifices a piece of money, the men of one kind, the women of another, and the children of a third. By this means an exact computation was made of the men, women, and children, in each tribe.

In the mean time, his two wards, Lucius Tarquinius and Arunx, the grandchildren of Tarquin, being grown up, in order to secure their fidelity, he married them to his two daughters. And though the elder of these daughters, who was of a mild and tractable disposition, resembled in character the younger of his pupils, as the elder of his pupils did the younger of his daughters, who was of a violent and vicious temper, yet he thought it advisable to give his elder daughter to Tarquin, and the younger to Arunx; for by that means he matched them according to their ages, and at the same time hoped that the elder Tullia's sweet disposition would temper Tarquin's impetuosity, and the younger Tullia's vivacity rouse the indolence of Arunx.

During the public rejoicing for this double marriage, the twelve lucumonies of Hettruria uniting their forces, attempted to shake off the Roman yoke; but were in several battles defeated by Servius, and obliged to submit to him on the same conditions on which they had submitted to his predecessor. For this success Servius was honoured with a third triumph.

The king being thus disengaged from a troublesome war, returned to the pursuit of his political schemes; and put in execution that masterpiece of policy which Rome made use of ever after, and which established a perpetual order and regularity in all the members of the state, with respect to wars, to the public revenues, and the suffrages of the comitia. The public supplies had hitherto been raised upon the people at so much an head, without any distinction of rich and poor; whence it likewise followed, that when levies were made for the war, the rich and poor were equally obliged to take the field, according to the order of their tribe; and as they all served at their own expence, the poorer sort could hardly bear the charges of a campaign. Besides, as the most indigent of the people saw themselves burdened with the same taxes as the rich, they pretended to an equal authority in the comitia: so that the election of kings and magistrates, the making of peace or war, and the judging of criminals, were given up into the hands of a populace who were easily corrupted, and had nothing to lose. Servius formed a project to remedy

Rome.
42
Enlarges
the city, and
adds a
fourth tribe
to those al-
ready in-
stituted.

43
Reforms
the state.

Rome.

dy these evils, and put it in execution, by enacting a law, enjoining all the Roman citizens to bring in an account in writing of their own names and ages, and of those of their fathers, wives, and children. By the same law, all heads of families were commanded to deliver in upon oath a just estimate of their effects, and to add to it the places of their abode, whether in town or country. Whoever did not bring in an account of his effects, was to be deprived of his estate, to be beat with rods, and publicly sold for a slave. Servius, from these particular accounts, which might be pretty well relied on, undertook to ease the poor by burdening the rich, and at the same time to please the latter by increasing their power.

44
His division
of the peo-
ple into
classes.

To this end, he divided the Roman people into six classes: the first class consisted of those whose estates and effects amounted to the value of 10,000 drachmæ, or 100,000 ascs of brass; the first way of computing being used by the Greeks, and the latter by the Latins. This class was subdivided into 80 centuries, or companies of foot. To these Servius joined 18 centuries of Roman knights, who fought on horseback; and appointed this considerable body of horsemen to be at the head of the first class, because the estates of these knights, without all doubt, exceeded the sum necessary to be admitted into it. However, the public supplied them with horses; for which a tax was laid upon widows, who were exempt from all other tributes. This first class, including infantry and cavalry, consisted of 98 centuries. The second class comprehended those whose estates were valued at 5700 drachmæ, or 75,000 ascs of brass. It was subdivided into 20 centuries, all foot. To these were added two centuries of carpenters, smiths, and other artificers. In the third class were those who were esteemed worth 5000 drachmæ, or 50,000 ascs. This class was subdivided into 20 centuries. The fourth class was of those whose effects were rated at the value of 500 drachmæ, or 25,000 ascs, and was divided into 20 centuries; to which were added two other centuries of trumpets, and blowers of the horn, who supplied the whole army with this martial music. The fifth class included those only whose whole substance did not amount to more than 1250 drachmæ, or 12,500 ascs; and this class was divided into 30 centuries. The sixth class comprehended all those who were not worth so much as those of the fifth class: they exceeded in number any other class, but nevertheless were reckoned but as one century.

The king drew from these regulations all the advantages he had expected. Levies for the army were no longer raised by tribes, nor were taxes laid at so much a head as formerly, but all was levied by centuries. When, for instance, an army of 20,000 men, or a large supply of money, was wanted for the war, each century furnished its quota both of men and money: so that the first class, which contained more centuries, though fewer men, than all the others together, furnished more men and more money for the public service than the whole Roman state besides. And by this means the Roman armies consisted for the most part of the rich citizens of Rome; who, as they had lands and effects to defend, fought with more resolution, while their riches enabled them to bear the expence of a campaign. As it was but just the king should make the first class amends for the weight laid on it,

he gave it almost the whole authority in public affairs; changing the comitia by curiæ, in which every man gave his vote, into comitia by centuries, in which the majority was not reckoned by single persons, but by centuries, how few soever there might be in a century. Hence the first class, which contained more centuries than the other five taken together, had every thing at its disposal. The votes of this class were first taken; and if the 98 centuries happened to agree, or only 97 of them, the affair was determined; because these made the majority of the 193 centuries which composed the six classes. If they disagreed, then the second, the third, and the other classes in their order, were called to vote, though there was very seldom any occasion to go so low as the fourth class for a majority of votes: so that by this good order Servius brought the affairs of the state to be determined by the judgment of the most considerable citizens, who understood the public interest much better than the blind multitude, liable to be imposed upon, and easily corrupted.

And now the people being thus divided into several orders, according to the census or valuation of their estates, Servius resolved to solemnize this prudent regulation by some public act of religion, that it might be the more respected and the more lasting. Accordingly, all the citizens were commanded to appear, on a day appointed, in the Campus Martius, which was a large plain, lying between the city and the Tiber, formerly consecrated by Romulus to the god Mars. Here the centuries being drawn up in battalia, a solemn lustration or expiatory sacrifice was performed in the name of all the people. The sacrifice consisted of a sow, a sheep, and a bull, whence it took the name of *suovetaurilia*. The whole ceremony was called *lustrum*, à *luendo*; that is, from paying, expiating, clearing, or perhaps from the goddess Lua, who presided over expiations, and to whom Servius had dedicated a temple. This wise king considering, that in the space of five years there might be such alterations in the fortunes of private persons as to entitle some to be raised to an higher class, and reduce others to a lower, enjoined that the census should be renewed every five years. As the census was usually closed by the lustrum, the Romans henceforth began to compute time by lustrums, each lustrum containing the space of five years. However, the lustrums were not always regularly observed, but often put off, though the census had been made in the fifth year. Some writers are of opinion, that Servius at this time coined the first money that had ever appeared at Rome; and add, that the circumstances of the lustrum probably led him to stamp the figures of the animals there slain on pieces of brass of a certain weight.

The government of the city being thus established in so regular a manner, Servius, touched with compassion for those whom the misfortunes of an unsuccessful war had reduced to slavery, thought that such of them as had by long and faithful services deserved and obtained their freedom, were much more worthy of being made Roman citizens, than untractable vagabonds from foreign countries, who were admitted without distinction. He therefore gave the freedmen their choice, either to return to their own country, or continue at Rome. Those who chose to continue there, he divided into four tribes, and settled them within the city; an

Rome.

45
The cen-
sus and
lustrum.

46
The freed-
men.

Rome.

and though they were distinguished from the plebeians by their old name of *liberti*, or *freedmen*, yet they enjoyed all the privileges of free citizens. The senate took offence at the regard which the king showed to such mean people, who had but lately shaken off their fetters; but Servius, by a most humane and judicious discourse, entirely appeased the fathers, who passed his institution into a law, which subsisted ever after.

47
Reforms
the royal
power.

The wise king, having thus established order among the people, undertook at last to reform the royal power itself; his equity, which was the main spring of all his resolutions, leading him to act contrary to his own interest, and to sacrifice one half of the royal authority to the public good. His predecessors had reserved to themselves the cognizance of all causes both public and private; but Servius, finding the duties of his office too much for one man to discharge well, committed the cognizance of ordinary suits to the senate, and reserved that only of state-crimes to himself.

48
Endeavours
to attach
the Sabines
and Latins
to the Ro-
mans.

All things being now regulated at home, both in the city and country, Servius turned his thoughts abroad, and formed a scheme for attaching the Sabines and Latins to the Romans, by such social ties as should be strengthened by religion. He summoned the Latin and Sabine cities to send their deputies to Rome, to consult about an affair of great importance. When they were come, he proposed to them the building of a temple in honour of Diana, where the Latins and Sabines should meet once a year, and join with the Romans in offering sacrifices to that goddess; that this festival should be followed by a council, in which all disputes between the cities should be amicably determined; that there proper measures should be taken to pursue their common interest; and, lastly, in order to draw the common people thither, a fair should be kept, at which every one might furnish himself with what he wanted. The king's design met with no opposition: the deputies only added to it, that the temple should be an inviolable asylum for the united nations; and that all the cities should contribute toward the expence of building it. It being left to the king to choose a proper place for it, he pitched upon the Aventine hill, where the temple was built, and assemblies annually held in it. The laws which were to be observed in these general meetings were engraved on a pillar of brass, and were to be seen in Augustus's time, in the Latin tongue, but in Greek characters.

49
Wicked in-
trigues of
his daugh-
ter and son-
in-law.

But now Servius was grown old; and the ambition of Tarquin his son-in-law revived in proportion as the king advanced in years. His wife used her utmost endeavours to check the rashness and fury of her husband, and to divert him from all criminal enterprises; while her younger sister was ever instigating Arunx, who placed all his happiness in a private life, to the most villanous attempts. She was continually lamenting her fate in being tied to such an indolent husband, and wishing she had either continued unmarried, or were become a widow. Similitude of temper and manners, formed, by degrees, a great intimacy between her and Tarquin. At length she proposed nothing less to him than the murdering of her father, sister, and husband, that they two might meet and ascend the throne together. Soon after, they paved their way to an incestuous marriage, he by poisoning his wife, and she her husband; and then had the assurance to ask the king's

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and queen's consent to their marriage. Servius and Tarquinia, though they did not give it, were silent, through too much indulgence to a daughter in whom now was their only hope of posterity. But these criminal nuptials were only the first step towards a yet greater iniquity. The wicked ambition of the new-married couple first showed itself against the king: for they publicly declared, that the crown belonged to them; that Servius was an usurper, who, being appointed tutor to Tarquin's grandchildren, had deprived his pupils of their inheritance; that it was high time for an old man, who was but little able to support the weight of public affairs, to give place to a prince who was of a mature age, &c.

The patricians, whom Servius had taken great pleasure in humbling during the whole time of his reign, were easily gained over to Tarquin's party; and, by the help of money, many of the poorer citizens were also brought over to his interest. The king, being informed of their treasonable practices, endeavoured to dissuade his daughter and son-in-law from such proceedings, which might end in their ruin; and exhorted them to wait for the kingdom till his death. But they, despising his counsels and paternal admonitions, resolved to lay their claim before the senate; which Servius was obliged to summon: so that the affair came to a formal process. Tarquin reproached his father-in-law with having ascended the throne without a previous interregnum; and with having bought the votes of the people, and despised the suffrages of the senate. He then urged his own right of inheritance to the crown, and injustice of Servius, who, being only his guardian, had kept possession of it, when he himself was of an age to govern. Servius answered, that he had been lawfully elected by the people; and that, if there could be an hereditary right to the kingdom, the sons of Ancus had a much better one than the grandsons of the late king, who must himself have been an usurper. He then referred the whole to an assembly of the people; which being immediately proclaimed all over the city, the forum was soon filled; and Servius harangued the multitude in such a manner as gained all their affections. They all cried out with one voice, *Let Servius reign; let him continue to make the Romans happy.* Amidst their confused clamours, these words were likewise heard: *Let Tarquin perish; let him die; let us kill him.* This language frightened him so, that he retired to his house in great haste; while the king was conducted back to his palace with the acclamations of the people.

The ill success of this attempt cooled Tarquin's ardent desire of reigning; but his ambition made him act a new part. He undertook to regain the favour of his father-in-law by caresses, submissions, and protestations of a sincere regard and affection for him; inasmuch that the king, who judged of the policy of others from his own, was sincerely reconciled to him, and tranquility re-established in the royal family. But it was not long ere Tarquin, roused by the continual reproaches of his wife, began to renew his intrigues among the senators; of whom he had no sooner gained a considerable party, than he clothed himself in the royal robes, and causing the fasces to be carried before him by some of his domestics, crossed the Roman forum, entered the temple where the senate used to meet, and seated him-

U u

self

Rome.

Rome.

self on the throne. Such of the senators as were in the faction he found already in their places (for he had given them private notice to be there early); and the rest, being summoned to assemble in Tarquin's name, made what haste they could to the appointed place, thinking that Servius was dead, since Tarquin assumed the title and functions of king. When they were all assembled, Tarquin made a long speech, reviling his father-in-law, and repeating the invectives against him, which he had so often uttered, calling him a slave, an usurper, a favourer of the populace, and an enemy to the senate and patricians. When he was yet speaking, Servius arrived; and, rashly giving way to the motions of his courage, without considering his strength, drew near the throne, to pull Tarquin down from it. This raised a great noise in the assembly, which drew the people into the temple; but nobody ventured to part the two rivals. Tarquin therefore, being more strong and vigorous, seized the old man by the waist, and, hurrying him through the temple, threw him down from the top of the steps into the forum. The king, who was grievously wounded, raised himself up with some difficulty: but all his friends had abandoned him; only two or three of the people, touched with compassion, lent him their arms to conduct him to his palace.

50
Servius
Tullius
murdered.

As they were leading him on so slowly, the cruel Tullia appeared in the forum, whither she had hastened in her chariot on the first report of what had passed in the senate. She found her husband on the top of the steps of the temple; and, transported with joy, was the first who saluted him king. The example was immediately followed by the senators of Tarquin's party. Nor was this enough for the unnatural daughter: she took aside her husband, and suggested to him, that he would never be safe so long as the usurper of his crown was alive. Hereupon Tarquin instantly dispatched some of his domestics to take away the remains of the unfortunate king's life. The orders for the wicked parricide were no sooner given than Tullia mounted her chariot again, with an air of triumph, to return home. The way to her house was through a narrow street, called *vicus cyprius*, or the *good street*. There the assassins had left the king's body, which was still panting. At this sight, the charioteer, struck with horror, checked his horses, and made a stop: but Tullia forced him to go on; and the blood of the father is said to have dyed the wheels of the chariot, and even the clothes of the inhuman daughter, whence the street was called ever after *vicus sceleratus*.

51
Tarquin II.
a cruel tyrant.

The new king proved a most despotic and cruel tyrant; receiving, in the very beginning of his reign, the surname of *proud*, on account of his capricious humour and haughty behaviour. All controversies whatever were decided by himself and his friends; and he banished, fined, and even executed, whom he pleased. The census and lustrum, the division of citizens into classes and centuries, were abolished; and all kinds of assemblies, even those for amusement and recreation, were prohibited, both in town and country. Nay, to such a height did Tarquin carry his insolence and tyranny, that the most virtuous of the senators went into voluntary banishment; while many of those who remained were cut off on various pretences, that the king might enjoy their estates.

Tarquin could not but be sensible of the extreme dan-

ger in which he stood by losing the affections of his people in such a manner. He therefore provided a sufficient number of soldiers, by way of guard, to prevent attempts upon his person; and gave his daughter to Octavius Mamilius, one of the most considerable men among the Latins, in order to strengthen his interest by this foreign alliance, in case of a revolt among his subjects. Mamilius accordingly procured many friends to his father-in-law, but he had like to have lost them again by his haughty behaviour. He had desired the Latins to call a national council at Ferentinum, where he would meet them on a day appointed by himself. The Latins accordingly met; but after waiting for several hours, Tarquin did not appear. On this, one Turnus Herdonius, an enterprising and eloquent man, who hated Tarquin, and was jealous of Mamilius, made a speech, in which he inveighed against the haughty behaviour of Tarquin, set forth the contempt which he had put upon the Latins, and concluded with desiring the council to break up and return home without taking any further notice of him. Mamilius, however, prevailed upon them to return the day following; when Tarquin made his appearance, and told the assembly that his design in calling them together was to claim his right of commanding the Latin armies, which he said was derived from his grandfather, but which he desired to be confirmed to him by them. These words were scarce out of his mouth, when Herdonius, rising up, entered into a detail of Tarquin's tyranny and arbitrary behaviour at Rome, which, he said, the Latins would soon feel in an equal degree, if they complied with Tarquin's demand. To this speech the king made no reply at that time, but promised to answer him next day. In the mean time, however, he bribed the domestics of Herdonius to admit among his baggage a large quantity of arms: and then, telling the Latins that Herdonius's opposition proceeded only from Tarquin's having refused him his daughter in marriage, accused him of having laid a plot to cut off all the deputies there present, and to usurp a jurisdiction over the Latin cities; as a proof of which he appealed to the arms hid among the baggage of Herdonius. The accused, conscious of his innocence, desired that his baggage might be searched; which being accordingly done, and the arms found, he was hurried away without being allowed to make any defence, and thrown into a basin at the head of the spring of Ferentinum, where a hurdle being laid upon him, and stones laid upon the hurdle, he was pressed down into the water and drowned.

Rome.

52
His infamous
stratagem to
destroy
Herdonius.

In consequence of this monstrous treachery, Tarquin was looked upon by the Latins as their deliverer, and declared general of the Latin armies; soon after which, the Hernici and two tribes of the Volsci entered into an alliance with him on the same terms. In order to keep these confederates together, Tarquin, with their consent, erected a temple to Jupiter Latialis on an hill near the ruins of Alba, where he appointed certain feasts called *Feria Latinae* to be held on the 27th of April, where the several nations were to sacrifice together, and on no account to commit any hostilities against each other during their continuance. The king then proceeded to make war on the rest of the Volsci who had refused to enter into an alliance with him. Some depredations which they had committed in the territories

53
Institutes
the *Feriae*
Latinae.

Rome. ries of the Latins served for a pretence to begin the war; but as Tarquin had no confidence in the Romans, his army was composed only of a small body of them who were incorporated among the Latin auxiliaries. However, he defeated the enemy, took one of their cities by storm, and gave the booty to his soldiers. He next turned his arms against the Sabines, whom he entirely defeated in two engagements, and made the whole nation tributary; for which exploits he decreed himself two triumphs, and on his return to Rome he employed the populace in finishing the sewers and circus which had been begun by his grandfather Tarquin I.

54
Reduces
Gabii by
treachery.

In the mean time, the persecutions of Tarquin against his own subjects daily drove some of the most considerable into banishment. A great number of patricians took refuge in Gabii, a city of Latium about 13 miles from Rome; where the inhabitants, touched with compassion for their misfortunes, not only received them with kindness, but began a war with Tarquin on their account. The Gabini seem to have been the most formidable enemies whom the Romans had hitherto met with; since Tarquin was obliged to raise a prodigious bulwark to cover the city on the side of Gabii. The war lasted seven years; during which time, by the mutual devastations committed by the two armies, a great scarcity of provisions took place in Rome. The people soon grew clamorous; and Tarquin being unable either to quiet them, or to reduce the Gabini, fell upon the following dishonourable and treacherous expedient. His son Sextus Tarquinius pretended to be on very bad terms with his father, and openly inveighed against him as a tyrant; on which he was proclaimed a rebel, and publicly beaten in the forum. This being reported at Gabii, by persons sent thither on purpose, the inhabitants became very desirous of having Sextus among them; and accordingly he soon went thither, having previously obtained a solemn promise from the inhabitants never to deliver him up to his father. Here he made frequent inroads into the Roman territories, and always came back laden with spoil, his father sending against him only such weak parties as must infallibly be worsted. By this means he soon came to have such a high degree of credit among the Gabini, that he was chosen general of their army, and was as much master at Gabii as Tarquin was at Rome. Finding then that his authority was sufficiently established, he dispatched a slave to his father for instructions; but the king, unwilling to return an explicit answer, only took the messenger into the garden, where he struck off the heads of the tallest poppies. Sextus understood that by this hint the king desired him to put to death the leading men in the city of Gabii, which he immediately put in execution; and while the city was in confusion on account of this massacre, he opened the gates to his father, who took possession of the city with all the pride of a conqueror.—The inhabitants dreaded every thing from the haughty tyranny of the Roman monarch; however, on this occasion he consulted his policy rather than his revenge; granted them their life, liberty, and estates, and even entered into a treaty of alliance with them. The articles were written on the hide of an ox, which was still to be seen in the time of Augustus, in the temple of Jupiter Fidius. After this, however, he made his son Sextus king of Gabii; sending off also

his two other sons, Titus and Arunx, the one to build a city at Signia, the other at Circæum, a promontory of the Tyrrhene sea, and both these to keep the Volsci in awe.

For some time Tarquin now enjoyed a profound peace; the Romans, being accustomed to oppression and the yoke of an imperious master, making no opposition to his will. During this interval Tarquin met with the celebrated adventure of the Sibyl; † See Sibyl. whose books were ever afterwards held in high estimation at Rome, and Tarquin appointed two persons of distinction to take care of them. These were called *Duumviri*; but their number was afterwards increased to 10, when they were called *Decemviri*; and then to 15, when they were termed *Quindcemviri*. At this time also the written civil law had its origin among the Romans; all the statutes enacted by the kings being collected into one body; which, from Papirius the name of the collector, was called the *Papirian law*. The temple of the Capitol was also finished; for which purpose the most skilful architects and workmen were brought from Hetruria, the populace being obliged to serve them in the most laborious parts.

55
Books of
the Sibyls.

We now come to the important revolution which put an end to the regal power at Rome, and introduced a new form of government, to which this city is allowed to owe the greatest part of her grandeur. Tarquin, as we have already seen, had left himself no friends among the rich citizens, by reason of the oppression under which he made them labour; and the populace were equally disaffected on account of their being obliged to labour in his public works. Among the many persons of distinction who had been sacrificed to the avarice or suspicions of Tarquin, was one M. Junius, who had married the daughter of Tarquin I. This nobleman had a son named *L. Junius Brutus*, who escaped the cruelty of the tyrant by pretending to be an idiot, which part he had ever since continued to act. Soon after the finishing of the works abovementioned, a violent plague happening to break out at Rome, Tarquin sent his sons Titus and Arunx to consult the oracle of Delphi; and the princes took Brutus along with them, to divert themselves with his pretended folly by the way. Brutus chose for his offering to the Delphic Apollo a stick of elder; which occasioned much laughter. However, he had the precaution to inclose a rod of gold within the stick; and to this probably it was owing, that the priestess gave the princes the following riddle, that he who should first kiss his mother should succeed Tarquin in the government of Rome. This answer had been given to their inquiries concerning the succession; upon which the two brothers either drew lots which of them should kiss their mother at their return, or agreed to do it at once, that both might reign jointly: but Brutus, imagining the oracle had another meaning, fell down and kissed the earth, the common mother of all living. This, in all probability, the priestess had meant; and had given the answer on purpose to have another proof of Brutus's ingenuity, which had already discovered itself, by his offering the elder stick.

56
Downfall
of the re-
gal power.

On the return of the princes to Rome, they found their father engaged in a war with the Rutuli. The treasury being exhausted by the sums which Tarquin had expended in his public works, he had marched to

U n 2

Ardea,

Rome.

Ardea, the capital of that nation, which lay about 20 miles from Rome, in hopes of taking it without opposition. Contrary to his expectation, however, he was obliged to besiege it in form; and this constrained him to lay a heavy tax upon his subjects, which increased the number of malcontents, and disposed every thing for a revolt. As the siege was carried on very slowly, the general officers frequently made entertainments for one another in their quarters. One day, when Sextus Tarquinius was entertaining his brothers, the conversation happened to turn upon their wives: every one extolled the good qualities of his own; but Collatinus bestowed such extravagant praises on his Lucretia, that the dispute ended in a kind of quarrel. It was then resolved that they should mount their horses and surprise their wives by their unexpected return. The king's daughters-in-law were employed in feasting and diversion, and seemed much disconcerted by the appearance of their husbands; but Lucretia, though the night was far advanced, was found, with her maids about her, spinning and working in wool. She was not at all discomposed by the company whom her husband brought with him, and they were all pleased with the reception she gave them. As Lucretia was very beautiful, Sextus Tarquinius conceived a passion for her, which resolving to satisfy at all events, he soon returned to Collatia in the absence of Lucretia's husband, and was entertained by her with great civility and respect. In the night-time he entered Lucretia's apartment, and threatened her with immediate death if she did not yield to his desires. But finding her not to be intimidated with this menace, he told her, that, if she still persisted in her refusal, he would kill one of her male slaves, and lay him naked by her when she was dead, and then declare to all the world that he had only revenged the injury of Collatinus. On this the virtuous Lucretia (who, it seems, dreaded prostitution less than the infamy attending it) submitted to the desires of Sextus; but resolved not to outlive the violence which had been offered her. She dressed herself in mourning, and took a poniard under her robe, having previously wrote to her husband to meet her at her father Lucretius's house, where she refused to discover the cause of her grief except in a full assembly of her friends and relations. Here, addressing herself to her husband Collatinus, she acquainted them with the whole affair; exhorted them to revenge the injury; and protested that she would not outlive the loss of her honour. Every one present gave her a solemn promise that they would revenge her quarrel; but while they endeavoured to comfort her, she suddenly stabbed herself to the heart with the dagger which she had concealed under her robe. See CHASTITY.

This extravagant action inflamed beyond measure the minds of all present. Brutus, laying aside his pretended folly, drew the bloody dagger out of Lucretia's body; and, showing it to the assembly, swore by the blood upon it that he would pursue Tarquin and his family with fire and sword: nor would he ever suffer that or any other family to reign in Rome. The same oath was taken by all the company; who were so much surprised at the apparent transition of Brutus from folly to wisdom, that they did whatever he desired them.—By his advice the gates of the city were shut, that nobody might go out of it to inform Tarquin of what

was going forward; which, as Lucretius had been left governor of the city by Tarquin, was put in execution without difficulty. The corpse of Lucretia was then exposed to public view; and Brutus having made a speech to the people, in which he explained the mystery of his conduct in counterfeiting folly for many years past, proceeded to tell them that the patricians were come to a resolution of deposing the tyrant, and exhorted them to concur in the same design. The people testified their approbation, and called out for arms; but Brutus did not think proper to trust them with arms till he had first obtained a decree of the senate in favour of the design. This was easily procured: the senate enacted that Tarquin had forfeited all the prerogatives belonging to the regal authority, condemned him and all his posterity to perpetual banishment, and devoted to the gods of hell every Roman who should hereafter, by word or deed, endeavour his restoration; and this decree was unanimously confirmed by the curiae.

Tarquin being thus deposed, the form of government became the next object. Lucretius was for the present declared *Interrex*; but Brutus being again consulted, declared, that though it was by no means proper for the state to be without supreme magistrates, yet it was equally necessary that the power should not be centered in one man, and that it should not be perpetual. For this reason he proposed, that two magistrates, called *consuls*, should be elected annually; that the state should thenceforth have the name of *republic*; that the ensigns of royalty should be abolished; and that the only ensigns of consular dignity should be an ivory chair, a white robe, and 12 lictors for their attendants. However, that he might not utterly abolish the name of *king*, he proposed that this title should be given to him who had the superintendency of religious matters, who should thenceforth be called *rex sacrorum*, or *king of sacred things*.

This scheme of Brutus being approved of, Brutus and Collatinus were proposed by Lucretius as the two first consuls, and unanimously accepted by the people, who thought it was impossible to find more implacable enemies to the Tarquins. They entered on their office in the year 508 B. C.; and Tullia, perceiving that now all was lost, thought proper to leave the city, and retire to her husband at Ardea. She was suffered to depart without molestation, though the populace hooted at her, and cursed her as she went along. Tarquin, in the mean time, being informed by some who had got out of Rome before the gates were shut, that Brutus was raising commotions to his prejudice, returned in haste to the city, attended only by his sons and a few friends; but, finding the gates shut, and the people in arms on the walls, he returned again to the camp: but here again, to his surprise, he found that the consuls had taken the opportunity of gaining over the army to their interest; so that, being refused admittance into the camp also, he was forced to fly for refuge, at the age of 76, with his wife and three sons, to Gabii, where Sextus had been made king. Here he continued for some time: but not finding the Latins very forward to revenge his cause, he retired into Hetruria; where, being the country of his mother's family, he hoped to find more friends, and a readier assistance for attempting the recovery of his throne.

The

57
Lucretia,
ravished by
Sextus Tar-
quinius,
kills her-
self.

58
Tarquin
deposed.

59
The form
of govern-
ment chan-
ged.

60

Tullius
leaves
Rome.

Rome.

61
State of the
Roman em-
pire at this
time.

The Romans now congratulated themselves on their happy deliverance from tyranny. However, as Tarquin had by his policy procured himself many friends abroad, these now became enemies to the Roman name; and, by the defection of their allies, the Roman dominions were left in much the same state as they had been in the time of Romulus. The territory of Rome had always been confined to a very narrow compass. Though almost constantly victorious in war for 243 years, they had not yet gained land enough to supply their city with provisions. The main strength of the state lay in the number of the citizens of Rome; which the custom of transplanting the inhabitants of the conquered cities thither had so prodigiously increased, that it put the Romans in a condition of usurping the authority over other nations, the most inconsiderable of which had an extent of territory far exceeding theirs. By frequent depredations and incursions they so harassed the petty states of Latium and Hetruria, that many of them were constrained to enter into treaties with Rome, by which they obliged themselves to furnish her with auxiliaries whenever she should be pleased to invade and pillage the lands of her other neighbours. Submissions of this kind the Romans called *making alliances* with them, and these useful alliances supplied the want of a larger territory; but now, upon the change of her government, all the allies of Rome forsook her at once, and either stood neuter, or espoused the cause of the banished king; so that she was now obliged to maintain her liberties as she best might.

The new consuls in the mean time took the most effectual methods they could for securing the liberties of the republic. The army which had been employed in the siege of Ardea marched home under the conduct of Herminius and Horatius, who concluded a truce with the Ardeates for 15 years. The consuls then again assembled the people by centuries, and had the decree of Tarquin's banishment confirmed; a *rex sacrorum* was elected to preside at the sacrifices, and many of the laws of Servius Tullius were revived, to the great joy of the people, who were thus restored to their ancient right of voting in all important affairs. Tarquin, however, resolved not to part with his kingdom on such easy terms. Having wandered from city to city in order to move compassion, he at length made Tarquinii the seat of his residence; where he engaged the inhabitants to send an embassy to Rome, with a modest, submissive letter from himself, directed to the Roman people. The ambassadors represented in such strong terms to the senate how reasonable it was to let the king be heard before he was condemned, and the danger which threatened the state from the neighbouring powers if that common justice were refused, that the consuls inclined to bring these agents before the people, and to leave the decision thereof to the curiæ; but Valerius, who had been very active in the revolution, strenuously opposed this, and by his influence in the senate got it prevented. As that illustrious body had been greatly thinned by the murders committed by Tarquin, new members were elected from among the knights, and the ancient number of 300 again completed. The old senators had been called *patres* or "fathers;" and as the names of the new ones were now written on the same roll, the whole body received the name of *patres conscripti*.

The old king was not to be foiled by a single at-

tempt. He prevailed on the inhabitants of Tarquinii to send a second embassy to Rome, under pretence of demanding the estates of the exiles, but with private instructions to get the consuls assassinated. The restoration of the estates of the exiles was opposed by Brutus, but Collatinus was for complying with it; whereupon Brutus accused his colleague of treachery, and of a design to bring back the tyrant. The matter was then referred to the people, where it was carried by one vote in favour of the Tarquins. But whilst the people were employed in loading carriages with the effects of the exiles, and in selling what could not be carried off, the ambassadors found means to draw some of the nearest relations of the consuls into a plot with them. These were three young noblemen of the Aquilian family (the sons of Collatinus's sister), and two of the Vitellii (whose sister Brutus had married); and these last engaged Titus and Tiberius, the two sons of Brutus, in the same conspiracy. They all bound themselves by solemn oaths, with the dreadful ceremony of drinking the blood of a murdered man and touching his entrails. They met at the house of the Aquilii, where they wrote letters to Tarquin and gave them to the ambassadors. But though they used all imaginable precaution, their proceedings were overheard by one Vindicius a slave, who immediately communicated the whole to Valerius; upon which all the criminals were apprehended. Brutus stood judge over his own sons; and, notwithstanding the intercession of the whole assembly, and the tears and lamentations of his children, commanded them to be beheaded; nor would he depart till he saw the execution of the sentence. Having performed this piece of heroic barbarity, he quitted the tribunal, and left Collatinus to perform the rest. Collatinus, however, being inclined to spare his nephews, allowed them a day to clear themselves; and caused Vindicius, the only witness against them, to be delivered up to his masters. This roused the indignation of the people in general, especially of Valerius, who had promised to protect the witness, and therefore he refused to deliver him up to the lictors. The multitude called aloud for Brutus to return; which when he had done, he told them that he had executed his two sons in consequence of his own paternal authority over them, but that it belonged to the people to determine the fate of the rest. Accordingly, by a decree of the curiæ, all the delinquents suffered as traitors except the ambassadors, who were spared out of respect to their character. The slave Vindicius had his liberty granted him; and was presented with 25,000 asces of brass, in value about L. 80 : 14 : 7 of our money. The decree for restoring the estates of the exiled Tarquins was annulled, their palaces were destroyed, and their lands divided among the indigent people. The public only retained a piece of ground, near the Campus Martius, which the king had usurped. This they consecrated to Mars, and it afterwards became a common field where the Roman youth exercised themselves in running and wrestling. But after this consecration, the superstitious Romans scrupled to use the corn which they found there ready reaped to their hands: so that, with some trees, it was thrown into the Tiber; and the water being low, it stopped in the middle of the river, and began to form a fine island named afterwards *Insula Sacra*.

The behaviour of Brutus towards his two sons struck
such

Rome.

63
A conspi-
racy formed
in his fa-
vour.

64
Brutus
causes two
of his own
sons to be
beheaded.

62
Tarquin
writes to
the Roman
people.

Rome.

such a terror into the Romans, that scarce any person durst oppose him; and therefore, as he hated Collatinus, he openly accused him before the people, and without ceremony deposed him from the consulship, banishing him at the same time from Rome. The multitude acquiesced in every thing he said, and refused to hear Collatinus speak in his own defence; so that the consul was on the point of being driven out with ignominy and disgrace, when Lucretius interposed, and prevailed upon Brutus to allow his colleague quietly to resign the fasces, and retire of his own accord from the city. Brutus then, to remove all suspicions of personal enmity, procured him a present of 20 talents out of the public treasury, to which he added five of his own. Collatinus then retired to Lavinium, where he lived in peace, and at last died of old age.

After the abdication of Collatinus, Valerius was chosen in his room; and as his temper agreed much better with Brutus than that of Collatinus, the two consuls lived in great harmony. Nothing, however, could make the dethroned king forego the hope of recovering his kingdom by force. He first engaged the Volsci and Tar-

65
Deposes his
colleague
Collatinus.

66
The Volsci
and Tar-
quinienfes
declare in
favour of
Tarquin.

quinienfes to join their forces in order to support his rights. The consuls marched out without delay to meet them. Brutus commanded the horse and Valerius the foot, drawn up in a square battalion. The two armies being in sight of each other, Brutus advanced with his cavalry, at the same time that Arunx, one of Tarquin's sons, was coming forward with the enemy's horse, the king himself following with the legions. Arunx no sooner discovered Brutus, than he made towards him with all the fury of an enraged enemy. Brutus advanced towards him with no less speed; and as both were actuated only by motives of hatred, without thoughts of self-preservation, both of them were pierced through with their lances. The death of the two generals served as a prelude to the battle, which continued with the utmost fury till night, when it could not be known which side had got the victory, or which had lost the greatest number of men. A report was spread, however, that a voice had been heard out of a neighbouring wood, declaring the Romans conquerors; and this, probably a stratagem of Valerius, operated so powerfully on the superstitious minds of the Volsci, that they left their camp in confusion, and returned to their own country. It is said that Valerius, having caused the dead to be numbered, found that the Volsci had lost 11,300 men, and the Romans only one short of that number.

67
Brutus and
Arunx kill
each other.

Valerius being left without a colleague in the consulship, and having for some reasons delayed to choose one, began to be suspected by the people of aspiring at the sovereignty; and these suspicions were in some measure countenanced by his building a fine house on the steep part of the hill Palatinus, which overlooked the forum, and was by them considered as a citadel. But of this Valerius was no sooner informed, than he caused this house to be pulled down, and immediately called an assembly of the people for the election of a consul, in which he left them entirely free. They chose Lucretius; and, being ashamed of having suspected Valerius, they complimented him with a large ground-plot in an agreeable place, where they built him a house. The new consul died a few days after his promotion, so that Valerius was once more left sole go-

vernor. In the interval betwixt the death of Lucretius and the choice of another consul, Valerius gave the people so many striking proofs of his attachment to their interest, that they bestowed upon him the surname of *Poplicola* or "popular;" nor was he ever called by another name afterwards.

When Poplicola's year of consulship expired, the Romans thought fit, in consequence of the critical situation of affairs, to elect him a second time, and joined with him T. Lucretius, the brother of the famous Lucretia. They began with restoring the census and lustrum; and found the number of Roman citizens, at or above the age of puberty, to amount to 130,000. As they apprehended an attack from the Latins on account of Tarquin, they were at great pains to fortify Siquirinum or Singliuria, an important post on that side. Contrary to their expectations, however, the Latins remained quiet; but an haughty embassy was received from Porfena king of Clusium in Hetruria, com-

Rome.

68
Porfena in-
vades the
Roman ter-
ritories,

Rome, or to restore them their estates. To the first of these demands the consuls returned an absolute refusal: and, as to the second, they answered, that it was impracticable; a part of those estates having been consecrated to Mars, and the rest divided among indigent people, from whom they could not be recovered. The imminent danger which now threatened the city, procured Valerius the honour of a third consulship; and with him was joined Horatius Pulvilius, who had enjoyed the dignity for a few months before in the interval betwixt the death of Lucretius and the expiration of the first consulate.

While the Romans were making the most vigorous preparations for defence, Porfena, attended by his son Arunx and the exiles, marched towards the city at the head of a formidable army, which was quickly joined by a considerable body of Latins under Mamilius, the son-in-law of Tarquin. The consuls and the senate took all imaginable care to supply the common people with provisions, lest famine should induce them to open the gates to Tarquin; and they desired the country people to lodge their effects in the fort Janiculum, which overlooked the city, and which was the only fortified place possessed by the Romans on that side the Tiber. Porfena, however, soon drove the Romans out of this fort; upon which the consuls made all their troops pass the river, and drew them up in order of battle to defend the bridge, while Porfena advanced to engage them. The victory was a long time doubtful; but at last the Romans fled.

69

And de-
feats their
army.

Horatius Cocles, nephew to the consul, with Sp. Lartius and T. Herminius, who had commanded the right-wing, posted themselves at the entrance of the bridge, and for a long time bravely defended it: but at last, the defensive arms of Lartius and Herminius being broken, they retired; and then Horatius desiring them to advise the consuls from him to cut the bridge at the other end, he for a while sustained the attack of the enemy alone. At last, being wounded in the thigh, and the signal given that the bridge was almost broken down, he leaped into the river, and swam across it through a shower of darts. The Romans, in token of gratitude for this eminent service, erected a statue to him in the temple of Vulcan, gave him as much land as he himself with one yoke of oxen could plough in one day; and each of the inha-

70
Bravery of
Horatius
Cocles.

bitants

Rome. bitants, to the number of 300,000, gave him the value of as much food as each consumed in a day. But notwithstanding all this, as he had lost one eye, and from his wounds continued lame throughout the remainder of his life, these defects prevented his ever being raised to the consulate, or invested with any military command.

71
Attempt
of Mutius
Cordus to
assassinate
Porfena.

The city was not yet fully invested; but as it was very difficult to find provisions for such a multitude, the inhabitants soon began to be in want. Porfena being informed of their difficulties, told them that he would supply them with provisions if they would take back their old masters; but to this they replied, that hunger was a less evil than slavery and oppression. The constancy of the Romans, however, was on the point of failing, when a young patrician, named *Mutius Cordus*, with the consent of the senate and consuls, undertook to assassinate Porfena. He got access to the *Hetrurian* camp, disguised like a peasant, and made his way to the king's tent. It happened to be the day on which the troops were all reviewed and paid; and Porfena's secretary, magnificently dressed, was sitting on the same tribunal with the king. Mutius, mistaking him for Porfena, instantly leaped upon the tribunal and killed him. He then attempted to make his escape; but being seized and brought back, he owned his design; and with a countenance expressive of desperate rage and disappointment, thrust his hand which had missed the blow into a pan of burning coals which stood by, and there held it for a considerable time. On this, Porfena, changing his resentment into admiration, granted him his life and liberty, and even restored him the dagger with which he intended to have stabbed himself. Mutius took it with his left hand, having lost the use of the other; and from this time had the name of *Scævola*, or "left-handed." He then, in order to induce Porfena to break up the siege, invented a story that 300 young Romans, all of them as resolute as himself, had sworn to take away the life of the king of *Hetruria*, or to perish in the attempt. This had the desired effect; Porfena sent deputies to Rome, whose only demands were, that the Romans should restore the estates of the Tarquins, or give them an equivalent, and give back the seven small towns which had been formerly taken from the Veientes. The latter of these demands was cheerfully complied with; but the former was still refused, until Porfena should hear the strong reasons they had to urge against it. A truce being agreed on, deputies were sent to the *Hetrurian* camp to plead the Roman cause against the Tarquins, and with them ten young men, and as many virgins, by way of hostages for performing the other article.

72
Adventure
of Clælia.

The reception which Porfena gave the deputies raised the jealousy of the Tarquins; who still retaining their ancient pride, refused to admit Porfena for a judge between them and the Romans. But the king, without any regard to their opposition, resolved to satisfy himself, by an exact inquiry, whether the protection he had given the Tarquins was just. But while the cause was ready to be opened before the Roman deputies, news were brought that the young women whom the Romans had sent as hostages had ventured to swim across the *Tiber*, and were returned to Rome. They had gone to bathe in the river, and Clælia happening to turn her eyes towards her native city, that

fight raised in her a desire of returning to it. She therefore ventured to swim across the river; and having encouraged her companions to follow her, they all got safe to the opposite shore, and returned to their fathers houses. The return of the hostages gave the consul *Poplicola* great uneasiness; he was afraid lest this rash action might be imputed to want of fidelity in the Romans. To remove therefore all suspicions, he sent a deputation to the *Hetrurian* camp, assuring the king that Rome had no share in the foolish attempt of the young women; and promising to send them immediately back to the camp from whence they had fled. Porfena was easily appeased; but the news of the speedy return of the hostages being known in the camp, the Tarquins, without any regard to the truce, or respect to the king their protector, lay in ambush on the road to surprise them. *Poplicola* having put himself at the head of the Roman troops who escorted them, sustained the attack of the Tarquins, though sudden and unexpected, till his daughter *Valeria* rode full speed to the *Hetrurian* camp, and gave notice of the danger her father and companions were in; and then *Arunx*, the king's son, flying with a great body of cavalry to their relief, put the aggressors to the rout.

This notorious piece of treachery in the Tarquins gave Porfena strong suspicions of the badness of their cause. He therefore assembled the chief commanders of the *Hetrurians*; and having heard in their presence the complaints of the Romans, and the justification of their proceedings against the Tarquins, he was so struck with horror at the recital of the crimes the Tarquins were charged with, that he immediately ordered them to leave his camp; declaring, that he renounced his alliance with them, and would no longer continue the hospitality he had shown them. He then commanded the ten young virgins to be brought before him, and inquired who was the first author and chief manager of the enterprise. They all kept silence, till *Clælia* herself, with an air of intrepidity, confessed, that she alone was guilty, and that she had encouraged the others by her advice. Upon this the king, extolling her resolution above the bravery of *Horatius* and the intrepidity of *Mutius*, made her a present of a fine horse, with sumptuous furniture. After this he concluded a peace with the Romans, and restored to them all their hostages; declaring, that their bare word was to him a sufficient security for the performance of the articles.

And now Porfena being about to return to *Clusium*, gave, before his departure, a further testimony of his respect and friendship for the Romans. He knew that Rome was greatly distressed for want of provisions; but being afraid to offend the inhabitants by relieving them in a direct manner, he ordered his soldiers to leave behind them their tents and provisions, and to carry nothing with them but their arms. As his camp abounded with all sorts of provisions, Rome was hereby much relieved in her wants. The moveables and corn of the *Hetrurians* were sold by auction to private persons; and on this occasion the Romans took up the custom of making a proclamation by an herald, whenever any effects belonging to the public were to be sold, in the following words, *These are Porfena's goods*. The design of this was to preserve the memory of that prince's kindness. The senate, not satisfied with this, erected a statue of the king near the comitium, and sent an embassy

Rome.

73
Treachery
of the Tar-
quins.

74
Porfena a-
bandons
their cause.

75
Concludes
a peace
with the
Romans,
and re-
lieves them.

Rome.

embassy to him with a present of a throne adorned with ivory, a sceptre, a crown of gold, and a triumphal robe.

76
The Latins
declare for
Tarquin.

Thus the Romans escaped the greatest danger they had hitherto been in. However, they did not yet enjoy tranquillity. The Sabines revolted, and continued the war for some time with great obstinacy: but being defeated in several engagements, they were at last obliged to submit; and scarce was this war ended, when another began with the Latins, who now declared for king Tarquin. Before they began this war, however, an embassy was sent to Rome, the purport of which was, that the Romans should raise the siege of Fidenæ which had revolted, and receive the Tarquins; who, on their part, should grant a general amnesty. The ambassadors were to allow the Romans a whole year to consider on these overtures; and to threaten them with a war in case they refused to comply with them. The chief view of Tarquin and his partisans in promoting this embassy was, to lay hold of that opportunity to raise a sedition in the city. To the ambassadors, therefore, of the Latins, he joined some of his own emissaries, who, on their arrival in the city, found two sorts of people disposed to enter into their measures; to wit, the slaves, and the meaner citizens.

77
A dangerous
conspiracy
against the
state,

The slaves had formed a conspiracy the year before to seize the Capitol, and set fire to the city in several quarters at the same time. But the plot being discovered, those who were concerned in it had been all crucified, and this execution had highly provoked the whole body of slaves. As to the meaner citizens, who were for the most part overwhelmed with debt, and cruelly used by their creditors, they were well apprised that there could happen no change in the government but to their advantage. These were the conspirators pitched upon, and to them were given the following parts to act: the citizens were to make themselves masters of the ramparts and gates of the city, at an appointed hour of the night; and then to raise a great shout as a signal to the slaves, who had engaged to massacre their masters at the same instant: the gates of the city were then to be opened to the Tarquins, who were to enter Rome while it was yet reeking with the blood of the senators. The conspiracy was ripe for execution, when Tarquin's principal agents, Publius and Marcus, both of his own name and family, being terrified with frightful dreams, had not courage enough to proceed in their design till they had consulted a diviner. However, they did not discover to him the conspiracy; but only asked him in general terms, what success they might expect in a project they had formed? The soothsayer, without the least hesitation, returned the following answer: *Your project will end in your ruin; disburden yourselves of so heavy a load.* Hereupon the Tarquins, fearing lest some of the other conspirators should be beforehand with them in informing, went immediately to S. Sulpitius, the only consul then at Rome, and discovered the whole matter to him. The consul greatly commended them, and detained them in his house, till, by private inquiries, he was assured of the truth of their depositions. Then he assembled the senate, and gave the Latin ambassadors their audience of leave, with an answer to their proposals; which was, that the Romans would neither receive the Tarquins, nor raise the siege of Fidenæ, being all

78
How discovered.

Rome. to a man ready to sacrifice their lives in defence of their liberties, and willing to undergo any dangers rather than submit to the government of a tyrant.

The ambassadors being dismissed with this answer, and conducted out of the city, Sulpitius laid open to the fathers the dreadful conspiracy. It struck them with horror: but they were all at a loss in what manner they should apprehend and punish the guilty; since, by the law of Poplicola, there was an appeal to the people in all capital cases; and the two witnesses, who were strangers, might be excepted against by Roman citizens. In this perplexity they left the whole conduct of this critical affair to Sulpitius; who took a method which he thought would equally serve to prove the guilt and punish the guilty. He engaged the two informers to assemble the conspirators, and to appoint a rendezvous at midnight in the forum, as if they designed to take the last measures for the execution of the enterprise. In the mean time he used all proper means to secure the city, and ordered the Roman knights to hold themselves ready, in the houses adjoining to the forum, to execute the orders they should receive. The conspirators met at the time and place appointed by the two Tarquins; and the knights, upon a signal agreed on beforehand, invested the forum, and blocked up all the avenues to it so closely, that it was impossible for any of the conspirators to make their escape. As soon as it was light, the two consuls appeared with a strong guard on the tribunal; for Sulpitius had sent to his colleague Manius, who was besieging Fidenæ, desiring him to hasten to the city with a chosen body of troops. The people were convened by curiæ, and acquainted with the conspiracy which had been formed against the common liberty. The accused were allowed to make their defence, if they had any thing to offer against the evidence; but not one of them denying the fact, the consuls repaired to the senate, where sentence of death was pronounced against the conspirators, in case the people approved it.

This decree of the senate being read to and approved by the assembly, the people were ordered to retire, and the conspirators were delivered up to the soldiers, who put them all to the sword. The peace of Rome was thought sufficiently secured by this stroke of severity; and therefore, though all the conspirators were not punished with death, it was judged proper not to make any further inquiries. The two informers were rewarded with all the privileges of Roman citizens, 100,000 asces, and 20 acres of land. Three festival-days were appointed for expiations, sacrifices, and public games, by way of thanksgiving to the gods. But the general joy was disturbed by a melancholy accident: as the people were conducting Manius Tullius the consul from the circus to his house, he fell from his chariot, and died three days after.

The city of Fidenæ was not yet reduced: it held out during the following consulship of T. Æbutius and P. Veturius; but was taken the next year by T. Lartius, who, together with Q. Clælius, was raised to the consular dignity. The Latins, enraged at the loss of this town, began to complain of their leading men; which opportunity Tarquin and Mamilius improved so far, as to make all the Latin cities, 24 in number, enter into an alliance against Rome, and to bind themselves by oath never to violate their engagements. The Latins

79
The conspirators
punished.

Rome. tins made vast preparations, as did likewise the Romans; but the latter could procure no assistance from their neighbours. As the Latin nation was much superior to them in strength, they sent deputies to solicit succours from the several states with which they were surrounded; but their negotiations proved every where unsuccessful; and, what was worse than all, the republic had rebellious sons in her own bosom, who refused to lend their aid in defence of their country. The poorer sort of people, and the debtors, refused to take the military oaths, or to serve; alleging their poverty, and the fruitless hazards they ran in fighting for the defence of a city, where they were oppressed and enslaved by their creditors. This spirit of mutiny spread among the inferior classes, most of them refusing to lift themselves, unless their debts were all remitted by a decree of the senate; nay, they began to talk of leaving the city, and settling elsewhere.

80
Disturbances at Rome.

The senate, apprehending a general insurrection, assembled to deliberate on the means of quieting those domestic troubles. Some were for a free remission of all debts, as the safest expedient at that juncture; others urged the dangerous consequences of such a condescension, advising them to lift such only as were willing to serve, not doubting but those who refused their assistance would offer it of their own accord when it was no longer desired. Several other expedients were proposed: but at length this prevailed; to wit, that all actions for debts should be suspended till the conclusion of the war with the Latins. But this the indigent debtors thought only a suspension of their misery; and therefore it had not the intended effect on the minds of the unruly multitude. The senate might indeed have prosecuted the ringleaders of the sedition; but the law of Poplicola, called the *Valerian law*, which allowed appeals to the assembly of the people, was a protection for the seditious, who were sure of being acquitted by the accomplices of their rebellion. The senate, therefore, to elude the effect of a privilege that put such a restraint upon their power, resolved to create one supreme magistrate, who, with the title of *dictator*, should have an absolute power for a time: but as this could not be done without striking at the law of Poplicola, and transferring the power of the people in criminal cases to a magistrate superior to all laws, it was necessary to use artifice, in order to obtain the consent of the curiæ. They therefore represented to them in a public assembly, that, in so difficult a conjuncture, when they had their domestic quarrels to decide, and at the same time a powerful enemy to repulse, it would be expedient to put the commonwealth under a single governor, who, superior to the consuls themselves, should be the arbiter of the laws, and as it were the father of his country; that his power should have no limits: but, however, lest he should abuse it, they ought not to trust him with it above six months.

81
A dictator created.

The people, not foreseeing the consequences of this change, agreed to it; but the greatest difficulty was to find a man duly qualified in all respects for so great a trust. T. Lartius, one of the consuls, seemed to be of all men the most unexceptionable; but the senate, fearing to offend his colleague by an invidious preference, gave the consuls the power of choosing a dictator, and obliged them to name one of themselves, not doubting but Clælius would yield to the superior ta-

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lents of his colleague; nor were they disappointed in their expectations. But Lartius, with the same readiness, named Clælius; and the only contest was, which of the two should raise the other to the supreme authority. Each persisted obstinately in remitting the dignity to his colleague, till Clælius, starting up on a sudden, abdicated the consulship, and, after the manner of an interrex, proclaimed Titus Lartius dictator, who thereupon was obliged to take upon him the government of the republic.

Lartius indeed took as much state upon him, after he had entered upon his office, as he had shown modesty in refusing it. He began by creating, without the participation either of the senate or people, a general of the Roman horse; an office which lasted only during the dictatorship, and which all subsequent dictators revived immediately after their election. Sp. Cassius, formerly consul, and honoured with a triumph, was the person he advanced to this second station in the republic. Lartius, having by this means secured the Roman knights, resolved, in the next place, to make the people respect and fear him. With this view he never appeared in public, without being attended by 24 lictors, to whose fasces he again added the axes which Poplicola had caused to be taken from them. The novelty of this sight was alone sufficient to awe the seditious, and, without executions, to spread consternation throughout Rome. The murmurs of the inferior classes being by this means silenced, the dictator commanded a census to be taken, according to the institution of King Servius. Every one, without exception, brought in his name, age, the particulars of his estate, &c. and there appeared to be in Rome 150,700 men who were past the age of puberty. Out of these the dictator formed four armies: the first he commanded himself; the second he gave to Clælius his late colleague; the third to Sp. Cassius his general of the horse; and the fourth he left in Rome, under the command of his brother Sp. Lartius, who was to guard the city. The Latins not being so forward in their preparations as was expected, all their hostilities against Rome this campaign amounted to no more than the sending a detachment into the Roman territory to lay it waste. The dictator gained some advantage over that party; and the great humanity with which he treated the prisoners and wounded, disposed the Latins to listen the more readily to the overtures which he at the same time made them for a suspension of hostilities. At length a truce was agreed on for a year; and then Lartius, seeing the republic restored to its former tranquillity, resigned the dictatorship, though the time appointed for its duration was not yet expired.

Rome.

82

He chooses a general of horse.

83

Number of the Romans.

The following consulship of Sempronius Atratinus and Minutius Angurinus, produced nothing memorable. But the next year the truce expired, when Aulus Posthumius and T. Virginus took possession of the consulship. Both Romans and Latins were busied in making the necessary preparations for war. The nobility of Latium, who were for the most part in the interest of the Tarquins, having found means to exclude the citizens from the Latin diets, carried all before them in those assemblies: whereupon many of the citizens removed with their families to Rome, where they were well received. The Latins being bent upon war, the senate, notwithstanding the perfect har-

X x

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Rome.

84
Battle of
Regillus.

mony that reigned between them and the people, thought it expedient to create a dictator. The two consuls were therefore impowered to name one of themselves to that dignity; whereupon Virginius readily yielded it to his colleague Posthumius, as the more able commander. The new dictator, having created Æbutius Elva his general of the horse, and divided his army into four bodies, left one of them, under the command of Sempronius, to guard the city; and with the other three, commanded by himself, Virginius, and Æbutius, marched out against the Latins, who, with an army of 40,000 foot and 3000 horse, under the command of Sextus Tarquinius, Titus Tarquinius, and Mamilius, had already made themselves masters of Corbio, a strong-hold belonging to the republic, and put the garrison to the sword. Posthumius encamped in the night on a steep hill near the lake Regillus, and Virginius on another hill over-against him. Æbutius was ordered to march silently in the night, with the cavalry and light-armed infantry, to take possession of a third hill upon the road, by which provisions must be brought to the Latins.

Before Æbutius had fortified his new camp, he was vigorously attacked by Lucius Tarquinius, whom he repulsed three times with great loss, the dictator having sent him a timely reinforcement. After this, Æbutius intercepted two couriers sent by the Volsci to the Latin generals, and, by letters found upon them, discovered, that a considerable army of the Volsci and Hernici were to join the Latin forces in three days. Upon this intelligence, Posthumius drew his three bodies of troops together, which amounted in all to no more than 24,000 foot and 1000 horse, with a design to engage the enemy before the arrival of the succours they expected. Accordingly he encouraged his men, and, with his army in battle-array, advanced to the place where the enemy was encamped. The Latins, who were much superior to the Romans in numbers, and besides began to want provisions, did not decline the engagement. Titus Tarquinius, at the head of the Roman exiles and deserters, was in the centre, Mamilius in the right wing, and Sextus Tarquinius in the left. In the Roman army the dictator commanded in the centre, Æbutius in the left wing, and Virginius in the right.

The first body which advanced was that of the dictator; and, as soon as it began to march, T. Tarquinius, singling out the dictator, ran full speed against him. The dictator did not decline the encounter, but, flying at his adversary, wounded him with a javelin in the right side. Upon this, the first line of the Latins advanced to cover their general; but he being carried out of the field, they made but a faint resistance when charged by the troops of the dictator. They were destitute of a leader; and therefore began to retire, when Sextus Tarquinius, taking the place of his brother, brought them back to the charge, and renewed the fight with such vigour, that the victory in the centre was still doubtful. On the side of Mamilius and Æbutius, both parties, encouraged by the example of their leaders, fought with incredible bravery and resolution. After a long and bloody contest, the two generals agreed to determine the doubtful victory by a single combat. Accordingly the champions pushed on their horses against each other. Æbutius with his lance

wounded Mamilius in the breast; and Mamilius with his sword Æbutius in the right arm. Neither of the wounds were mortal; but, both generals falling from their horses, put an end to the combat. Marcus Valerius, the brother of Poplicola, supplying the place of Æbutius, endeavoured, at the head of the Roman horse, to break the enemy's battalions; but was repulsed by the cavalry of the Roman royalists. At the same time Mamilius appeared again in the van, with a considerable body of horse and light-armed infantry. Valerius, with the assistance of his two nephews, the sons of Poplicola, and a chosen troop of volunteers, attempted to break through the Latin battalions, in order to engage Mamilius; but, being surrounded by the Roman exiles, he received a mortal wound in his side, fell from his horse, and died. The dead body was carried off by the two sons of Poplicola, in spite of the utmost efforts of the exiles, and delivered to Valerius's servants, who conveyed it to the Roman camp; but the young heroes being afterwards invested on all sides, and overpowered by numbers, were both killed on the spot. Upon their death, the left wing of the Romans began to give ground, but were soon brought back by Posthumius; who, with a body of Roman knights, flying to their assistance, charged the royalists with such fury, that they were, after an obstinate resistance, obliged to give way, and retire in the utmost confusion. In the mean time Titus Horminius, one of the dictator's lieutenants, having rallied those who had fled, fell upon some close battalions of the enemy's right wing, which still kept their ground under the command of Mamilius, killed him with his own hand, and put that body to flight. But while he was busy in stripping the body of his enemy, he received himself a wound, of which he died soon after.

Sextus Tarquinius in the mean time maintained the fight with great bravery, at the head of the left wing, against the consul Virginius; and had even broke thro' the right wing of the Roman army, when the dictator attacked him unexpectedly with his victorious squadrons. Then Sextus, having lost at once all hopes of victory, threw himself, like one in despair, into the midst of the Roman knights, and there sunk under a multitude of wounds, after he had distinguished himself in a most eminent manner. The death of the three 85
generals was followed by the entire defeat of the Latin army. Their camp was taken and plundered, and most of their troops cut in pieces; for, of the 43,000 men who came into the field, scarce 10,000 returned home. The next morning the Volsci and Hernici came, according to their agreement, to assist the Latins; but finding, upon their arrival, how matters had gone, some of them were for falling upon the Romans before they could recover from the fatigue of the preceding day; but others thought it more safe to send ambassadors to the dictator, to congratulate him on his victory, and assure him that they had left their own country with no other design than to assist Rome in so dangerous a war. Posthumius, by producing their couriers and letters, gave them to understand that he was well apprised of their designs and treacherous proceedings. However, out of a regard to the law of nations, he sent them back unhurt, with a challenge to their generals to fight the next day; but the Volsci, and their confederates, not caring to engage a victorious army, de-
camped

85
The Latins
entirely de-
feated, and
their camp
taken.

Rome.
86
The whole
nation sub-
mits.

camped in the night, and returned to their respective countries before break of day.

The Latins having now no remedy but an entire submission, sent ambassadors to solicit a peace at Rome, yielding themselves absolutely to the judgment of the senate. As Rome had long since made it a maxim to spare the nations that submitted, the motion of Titus Lartius, the late dictator, prevailed; and the ancient treaties with the Latins were renewed, on condition, however, that they should restore the prisoners they had taken, deliver up the deserters, and drive the Roman exiles out of Latium. Thus ended the last war which the Romans waged with their neighbours on account of their banished king; who, being now abandoned by the Latins, Hetrurians, and Sabines, retired into Campania, to Aristodemus tyrant of Cumæ, and there died, in the 90th year of his age and 14th of his exile.

87
Tarquin
dies.

The Romans were no sooner freed from these dangerous wars, than they began to oppress one another; and those domestic feuds took place which continued more or less during the whole time of the republic. The first disturbances were occasioned by the oppression of the plebeians who were debtors to the patricians. The senate, who were at the head of the patricians, chose to the consulate one Appius Claudius, who violently opposed the pretensions of the plebeians; but gave him for his colleague one P. Servilius, who was of a quite contrary opinion and disposition. The consequence of this was, that the consuls disagreed; the senate did not know what to determine, and the people were ready to revolt. In the midst of these disturbances, an army of the Volsci advanced towards Rome; the people refused to serve; and had not Servilius procured some troops who served out of a personal affection to himself, the city would have been in great danger.

88
New di-
sturbances
at Rome.

But though the Volsci were for this time driven back, they had no intention of dropping their designs; they engaged in an alliance with them the Hernici and Sabines. In the mean time, the disputes at Rome continued with as much violence as ever. Nay, though they were expressly told that the Volscian army was on its way to besiege the city, the plebeians absolutely refused to march against them; saying, that it was the same thing whether they were chained by their own countrymen or by the enemy. In this extremity Servilius promised, that when the enemy were repulsed the senate would remit all the debts of the plebeians. This having engaged them to serve, the consul marched out at their head, defeated the enemy in a pitched battle, and took their capital, giving it up to be plundered by his soldiers, without reserving any part for the public treasury.

Whatever might have been the reasons of Servilius for this step, it furnished Appius with a pretence for refusing him a triumph, as a man of a seditious disposition, who aimed at popularity by an excessive indulgence and profuseness to his soldiers. Servilius, incensed at this injustice, and encouraged by the acclamations of the people, decreed himself a triumph in spite of Appius and the senate. After this he marched against the Aurunci, who had entered Latium; and, in conjunction with Posthumus Regillens, he utterly defeated them, and obliged them to retire into their own country. But neither the services of the general nor

his soldiers could mollify the senate and patrician party. Appius even doubled the severity of his judgments, and imprisoned all those who had been set at liberty during the war. The prisoners cried for relief to Servilius; but he could not obtain the accomplishment of those promises which the senate never had meant to perform; neither did he choose to quarrel openly with the whole patrician body; so that, striving to preserve the friendship of both parties, he incurred the hatred of the one and the contempt of the other. Perceiving therefore that he had lost all his interest with the plebeians, he joined with the patricians against them; but the plebeians rushing tumultuously into the forum, made such a noise, that no sentence pronounced by the judges could be heard, and the utmost confusion prevailed through the whole city. Several proposals were made to accommodate matters; but through the obstinacy of Appius and the majority of the senators, they all came to nothing. In the mean time it was necessary to raise an army against the Sabines, who had invaded the territories of the republic; but the people refused to serve. Manius Valerius, however, brother to the celebrated Poplicola, once more prevailed upon them to march out against the common enemy; having previously obtained assurances from the senate that their grievances should be redressed. But no sooner had victory declared in favour of the Romans, than the senate, apprehending that the soldiers at their return would challenge Valerius, who had been nominated dictator, for the performance of their promises, desired him and the two consuls to detain them still in the field, under pretence that the war was not quite finished. The consuls obeyed; but the dictator, whose authority did not depend on the senate, disbanded his army, and declared his soldiers free from the oath which they had taken; and as a further proof of his attachment to the plebeians, he chose out of that order 400, whom he invested with the dignity of knights. After this he claimed the accomplishment of the promises made by the senate: but instead of performing them, he had the mortification to hear himself loaded with reproaches; on which he resigned his office as dictator, and acquainted the people with his inability to fulfil his engagements to them. No sooner were these transactions known in the army, than the soldiers, to a revolt, but man, deserted the consuls and other officers, and retired to a hill called afterwards *Mons Sacer*, three miles from Rome, where they continued to observe an exact discipline, offering no sort of violence whatever. The senate, after taking proper measures for the defence of the city, sent a deputation to the malecontents; but it was answered with contempt. In short, all things tended to a civil war, when at last matters were compromised by the institution of tribunes of the people, who had power to prevent the passing of any law that might be prejudicial to the people, and whose persons were declared sacred, insomuch that whoever offered the least violence to the person of a tribune was declared accursed, his effects were to be consecrated to Ceres, and he himself might be killed with impunity; and all the Romans were to engage themselves, in their own name and that of their posterity, never to repeal this law. The people, after these regulations, erected an altar to Jupiter the Terrible, on the top of the hill where their camp had stood; and when they had offered

Rome.

89
The soldiers
to a revolt, but
all the
troubles are
ended by
creating
tribunes
of the
people.

Rome.

ed sacrifices to the god, and consecrated the place of their retreat, they returned to Rome, led by their new magistrates and the deputies of the senate.

Thus the Roman constitution, which had originally been monarchic, and from thence had passed into an aristocracy, began now to verge towards a democracy. The tribunes immediately after their election obtained permission from the senate to elect two persons as their ministers or assistants, who should ease them a little in the great multiplicity of their affairs. These were called *plebeian aediles*; and afterwards came to have the inspection of the public baths, aqueducts, with many other offices originally belonging to the consuls, after which they were called simply *aediles*.

All opposition to the making of regular levies being now at an end, the consul Cominius led an army against the Volsci. He defeated them in battle, and took from them Longula and Polusca; after which he besieged Corioli, a city strongly fortified, and which might be called their capital. He carried this place, and gained a victory over the Antiates, the same day; but Caius Marcius, an eminent patrician, had all the glory of both actions. The troops detached by the consul to scale the walls of Corioli being repulsed in their first assault, Marcius rallied the runaways, led them on afresh to the charge, drove back the enemy within their walls, and, entering the city with them, made himself master of it. This exploit achieved, he with all expedition put himself in the foremost ranks of the consul's main army, that was just going to engage with the Antiates, who were come to the relief of the place; and there he behaved with equal bravery, and had equal success.

The next day the consul, having erected his tribunal before his tent, called the soldiers together. His whole speech to them was little more than a panegyric upon Marcius. He put a crown upon his head; assigned him a tenth part of all the spoil; and, in the name of the republic, made him a present of a fine horse with stately furniture, giving him leave at the same time to choose out any ten of the prisoners for himself; and lastly, he allotted him as much money as he could carry away. Of all these offers Marcius accepted only the horse, and one captive of the ten, an old friend of his family, that he might give him his liberty. To add to the glory of the brave warrior, the consul bestowed on him the surname of *Coriolanus*, transferring thereby from himself to Marcius all the honour of the conquest of Corioli. Cominius, at his return to Rome, disbanded his army; and war was succeeded by works of religion, public games, and treaties of peace. A census and a lustrum closed the events of this memorable consulship. There appeared to be in Rome at this time no more than 110,000 men fit to bear arms; a number by many thousands less than at the last enrollment. Doubtless great numbers had run away to avoid being slaves to their creditors.

Under the following administration of T. Geganius and P. Minucius, Rome was terribly afflicted by a famine, occasioned chiefly by the neglect of ploughing and sowing during the late troubles; for the sedition had happened after the autumnal equinox, about sowing-time, and the accommodation was not made till just before the winter solstice. The senate dispatched agents into Hetruria, Campania, the country of the

Volsci, and even into Sicily, to buy corn. Those who embarked for Sicily met with a tempest which retarded their arrival at Syracuse; where they were constrained to pass the winter. At Cumæ, the tyrant Aristodemus seized the money brought by the commissaries; and they themselves with difficulty saved their lives by flight. The Volsci, far from being disposed to succour the Romans, would have marched against them, if a sudden and most destructive pestilence had not defeated their purpose. In Hetruria alone the Roman commissaries met with success. They sent a considerable quantity of grain from thence to Rome in barks: but this was in a short time consumed, and the misery became excessive: the people were reduced to eat any thing they could get; and nature in so great extremity loathed nothing.

During this distress a deputation came from Velitræ a Volscian city, where the Romans had formerly planted a colony, representing that nine parts in ten of its inhabitants had been swept away by a plague, and praying the Romans to send a new colony to repeople it. The conscript fathers without much hesitation granted the request, pressed the departure of the colony, and without delay named three leaders to conduct it.

The people at first were very well pleased with the proposal, as it gave them a prospect of relief in their hunger: but when they reflected on the terrible havoc the plague had made among the old inhabitants of Velitræ, they began to fear that the place might be still infected; and this apprehension became so universal, that not one of them would consent to go thither. Nevertheless the senate at length published a decree that all the citizens should draw lots; and that those to whose lot it fell to be of the colony should instantly march for Velitræ, or suffer the severest punishments for their disobedience: fear and hunger made the people comply; and the fathers, a few days after, sent away a second colony to Norba, a considerable city of Latium. But the patricians were disappointed as to the benefit they expected from these measures. The plebeians who remained in Rome being more and more pressed by hunger and want, grew daily more angry with the senate. At first they assembled in small companies to vent their wrath in abusive complaints; and at length, in one great body, rushed all together into the forum, calling out upon their tribunes for succour.

The tribunes made it their business to heighten the general discontent. Having convened the people, Spurius Icilius, chief of the college of tribunes, inveighed most bitterly against the senate; and when he had ended his harangue, exhorted others to speak freely their thoughts; particularly, and by name, calling upon Brutus and Sicinius, the ringleaders of the former sedition, and now *aediles*. These men, far from attempting to extinguish the fire, added fresh fuel to it: And the more to inflame the spirits of the multitude, they enumerated all the past insults which the people had suffered from the nobles. Brutus concluded his harangue with loudly threatening, that if the plebeians would follow his advice, he would soon oblige those men who had caused the present calamity to find a remedy for it; after which the assembly was dismissed.

The next day, the consuls, greatly alarmed at this commotion, and apprehending from the menaces of Brutus some very mischievous event, thought it advisable

90
Bravery of
Caius Mar-
cius Corio-
lanus.

91
Diminu-
tion of the
power of
the Ro-
mans.

92
A famine
in the city.

Rome.

93
A colony
sent to Ve-
litræ.

94
Disturban-
ces raised
by the tri-
bunes.

Rome.

fable to convene the senators, that they might consider of the best means to avert the impending evil. The fathers could not agree in opinion. Some were for employing soft words and fair promises to quiet and gain over the most turbulent. But Appius's advice prevailed: which was, that the consuls should call the people together, assure them that the patricians had not brought upon them the miseries they suffered, and promise, on the part of the senate, all possible care to provide for their necessities; but at the same time should reprove the disturbers of the public peace, and threaten them with the severest punishments if they did not amend their behaviour.

When the consuls, towards the close of the day, having assembled the people, would have signified to them the disposition and intention of the senate, they were interrupted by the tribunes. A dispute ensued, in which no order or decency was observed on either side. Several speaking at the same time, and with great vociferation, no one could be well understood by the audience. The consuls judged, that being the superior magistrates, their authority extended to all assemblies of the citizens. On the other side, it was pretended, that the assemblies of the people were the province of the tribunes, as the senate was that of the consuls.

95
The power
of the
people in-
creases.

The dispute grew warm, and both parties were ready to come to blows; when Brutus having put some questions to the consuls, ended it for that time. Next day he proposed a law which was carried, that no person whatever should interrupt a tribune when speaking in an assembly of the people; by which means the influence and power of the popular party was considerably increased, and the tribunes became formidable opponents to the consuls and patricians. An opportunity soon offered for both parties to try their strength. A great fleet of ships laden with corn from Sicily, a great part of which was a present from Gelon the king of that country to the Romans, and the rest purchased by the senate with the public money, raised their spirits once more.

But Coriolanus incurred their resentment, by insisting that it should not be distributed till the grievances of the senate were removed. For this, the tribunes summoned him to a trial before the people, under pretence that he aspired at the sovereignty.

96
Coriolanus
banished.

When the appointed day was come, all persons were filled with the greatest expectations, and a vast concourse from the adjacent country assembled and filled up the forum. Coriolanus, upon this, presented himself before the people with a degree of intrepidity that merited better fortune. His graceful person, his persuasive eloquence, the cries of those whom he had saved from the enemy, inclined the auditors to relent. But being confounded with a new charge which he did not expect, of having embezzled the plunder of Antium, the tribunes immediately took the votes, and Coriolanus was condemned to perpetual exile.

This sentence against their bravest defender struck the whole body of the senate with sorrow, consternation, and regret. Coriolanus alone, in the midst of the tumult, seemed an unconcerned spectator. He returned home, followed by the lamentations of hundreds of the most respectable senators and citizens of Rome, to take a lasting leave of his wife, his children, and his mother Veturia. Thus recommending his little children to

their care, he left the city, without followers or fortune, to take refuge with Tullus Attius, a man of great power among the Volscians, who took him under his protection, and espoused his quarrel.

The first thing to be done, was to induce the Volsci to break the league which had been made with Rome; and for this purpose Tullus sent many of his citizens thither, in order to see some games at that time celebrating; but at the same time gave the senate private information, that the strangers had dangerous intentions of burning the city. This had the desired effect; the senate issued an order that all strangers, whoever they were, should depart from Rome before sunset. This order Tullus represented to his countrymen as an infraction of the treaty, and procured an embassy to Rome, complaining of the breach, and demanding back all the territories belonging to the Volscians, of which they had been violently dispossessed; declaring war in case of a refusal: but this message was treated by the senate with contempt.

War being thus declared on both sides, Coriolanus and Tullus were made generals of the Volscians; and accordingly invaded the Roman territories, ravaging and laying waste all such lands as belonged to the plebeians, but letting those of the senators remain untouched. In the mean time, the levies went on very slowly at Rome; the two consuls, who were re-elected by the people, seemed but little skilled in war, and even feared to encounter a general whom they knew to be their superior in the field. The allies also showed their fears, and slowly brought in their succours; so that Coriolanus continued to take their towns one after the other. Fortune followed him in every expedition; and he was now so famous for his victories, that the Volsci left their towns defenceless to follow him into the field. The very soldiers of his colleague's army came over to him, and would acknowledge no other general. Thus finding himself unopposed in the field, and at the head of a numerous army, he at length invested the city of Rome itself, fully resolved to besiege it. It was then that the senate and the people unanimously agreed to send deputies to him, with proposals of restoration, in case he should draw off his army. Coriolanus received their proposals at the head of his principal officers, and, with the sternness of a general that was to give the law, refused their offers.

Another embassy was now sent forth, conjuring him not to exact from his native city aught but what became Romans to grant. Coriolanus, however, still persisted in his former demands, and granted them but three days in which to finish their deliberations. In this exigence, all that was left was another deputation still more solemn than either of the former, composed of the pontiffs, the priests, and the augurs. These, clothed in their habits of ceremony, and with a grave and mournful deportment, issued from the city, and entered the camp of the conqueror: but all in vain, they found him severe and inflexible as before.

When the people saw them return ineffectually, they began to give up the commonwealth as lost. Their temples were filled with old men, with women and children, who, prostrate at their altars, put up their ardent prayers for the preservation of their country. Nothing was to be heard but anguish and lamentation, nothing to be seen but scenes of affright and distress. At length

Rome.

97
He leaves
the city,
and joins
the Volsci.

98
Gains great
advantages
over the
Romans.

99
Invests the
city.

Rome.
100
But abandons the enterprize at the intercession of his mother.

it was suggested to them, that what could not be effected by the intercession of the senate or the adjuration of the priests, might be brought about by the tears of his wife, or the commands of his mother. This deputation seemed to be relished by all; and even the senate itself gave it the sanction of their authority. Veturia, the mother of Coriolanus, at first made some hesitation to undertake so pious a work: however, she at last undertook the embassy, and set forward from the city, accompanied by many of the principal matrons of Rome, with Volumnia his wife, and his two children. Coriolanus, who at a distance discovered this mournful train of females, was resolved to give them a denial, and called his officers round him to be witnesses of his resolution; but, when told that his mother and his wife were among the number, he instantly came down from his tribunal to meet and embrace them. At first, the women's tears and embraces took away the power of words; and the rough soldier himself, hard as he was, could not refrain from sharing in their distress. Coriolanus now seemed much agitated by contending passions; while his mother, who saw him moved, seconded her words by the most persuasive eloquence, her tears: his wife and children hung round him, intreating for protection and pity; while the fair train, her companions, added their lamentations, and deplored their own and their country's distress. Coriolanus for a moment was silent, feeling the strong conflict between honour and inclination: at length, as if roused from his dream, he flew to take up his mother, who had fallen at his feet, crying out, "O my mother, thou hast saved Rome, but lost thy son." He accordingly gave orders to draw off the army, pretending to the officers that the city was too strong to be taken. Tullus, who had long envied his glory, was not remiss in aggravating the lenity of his conduct to his countrymen. Upon their return, Coriolanus was slain in an insurrection of the people, and afterwards honourably buried, with late and ineffectual repentance.

101
Is assassinated by the Volsci.

102
New disturbances.

The year following, the two consuls of the former year, Manlius and Fabius, were cited by the tribunes to appear before the people. The Agrarian law, which had been proposed some time before, for equally dividing the lands of the commonwealth among the people, was the object invariably pursued, and they were accused of having made unjustifiable delays in putting it off.

It seems the Agrarian law was a grant the senate could not think of giving up to the people. The consuls, therefore, made many delays and excuses, till at length they were once more obliged to have recourse to a dictator; and they fixed upon Quintus Cincinnatus, a man who had for some time given up all views of ambition, and retired to his little farm, where the deputies of the senate found him holding the plough, and dressed in the mean attire of a labouring husbandman. He appeared but little elevated with the addresses of ceremony and the pompous habits they brought him; and, upon declaring to him the senate's pleasure, he testified rather a concern that his aid should be wanted. However, he departed for the city, where both parties were strongly enflamed against each other: but he was resolved to side with neither; only, by a strict attention to the interests of his country, instead of gaining the confidence of faction, to obtain the esteem of all.

Thus, by threats and well-timed submission, he prevailed upon the tribunes to put off their law for a time, and carried himself so as to be a terror to the multitude whenever they refused to enlist; and their greatest encourager whenever their submission deserved it. Thus, having restored that tranquillity to the people which he so much loved himself, he again gave up the splendors of ambition, to enjoy it with a greater relish in his little farm.

Rome.
103
Quelled by Cincinnatus

Cincinnatus was not long retired from his office when a fresh exigence of the state once more required his assistance. The Æqui and the Volsci, who, though still worsted, still were for renewing the war, made new inroads into the territories of Rome. Minutius, one of the consuls who succeeded Cincinnatus, was sent to oppose them; but being naturally timid, and rather more afraid of being conquered than desirous of victory, his army was driven into a defile between two mountains, from which, except through the enemy, there was no egress. This, however, the Æqui had the precaution to fortify; by which the Roman army was so hemmed in on every side, that nothing remained but submission to the enemy, famine, or immediate death. Some knights, who found means of getting away privately through the enemy's camp, were the first that brought the account of this disaster to Rome. Nothing could exceed the consternation of all ranks of people when informed of it. The senate at first thought of the other consul; but not having sufficient experience of his abilities, they unanimously turned their eyes upon Cincinnatus, and resolved to make him dictator. Cincinnatus, the only person on whom Rome could now place her whole dependence, was found, as before, by the messengers of the senate, labouring in his little field with cheerful industry. He was at first astonished at the ensigns of unbounded power with which the deputies came to invest him; but still more at the approach of the principal of the senate, who came out to meet him. A dignity so unlooked for, however, had no effect upon the simplicity or the integrity of his manners: and being now possessed of absolute power, and called upon to nominate his master of the horse, he chose a poor man named *Tarquitius*, one who, like himself, despised riches when they led to dishonour. Upon entering the city, the dictator put on a serene look, and intreated all those who were able to bear arms to repair before sun-set to the Campus Martius (the place where the levies were made) with necessary arms, and provisions for five days. He put himself at the head of these; and, marching all night with great expedition, he arrived before day within sight of the enemy. Upon his approach, he ordered his soldiers to raise a loud shout, to apprize the consul's army of the relief that was at hand. The Æqui were not a little amazed when they saw themselves between two enemies; but still more when they perceived Cincinnatus making the strongest entrenchments beyond them, to prevent their escape, and inclosing them as they had inclosed the consul. To prevent this, a furious combat ensued; but the Æqui, being attacked on both sides, and unable to resist or fly, begged a cessation of arms. They offered the dictator his own terms: he gave them their lives; but obliged them, in token of servitude, to pass under the yoke, which was two spears set upright, and another across, in the form of a gallows, beneath which the

104
Who saves a consular army from destruction.

Rome. the vanquished were to march. Their captains and generals he made prisoners of war, being reserved to adorn his triumph. As for the plunder of the enemy's camp, that he gave entirely up to his own soldiers, without reserving any part for himself, or permitting those of the delivered army to have a share. Thus, having refused a Roman army from inevitable destruction, having defeated a powerful enemy, having taken and fortified their city, and, still more, having refused any part of the spoil, he resigned his dictatorship, after having enjoyed it but 14 days. The senate would have enriched him; but he declined their proffers, choosing to retire once more to his farm and his cottage, content with temperance and fame.

105
Bravery of
Sicinius
Dentatus.

But this repose from foreign invasion did not lessen the tumults of the city within. The clamours for the Agrarian law still continued, and still more fiercely, when Sicinius Dentatus, a plebeian, advanced in years, but of an admirable person and military deportment, came forward, to enumerate his hardships and his merits. This old soldier made no scruple of extolling the various merits of his youth; but indeed his achievements supported ostentation. He had served his country in the wars 40 years; he had been an officer 30, first a centurion, and then a tribune: he had fought 120 battles, in which, by the force of his single arm, he had saved a multitude of lives: he had gained 14 civic, three mural, and eight golden crowns, besides 83 chains, 60 bracelets, 18 gilt spears, and 23 horse-trappings, whereof nine were for killing the enemy in single combat: moreover, he had received 45 wounds, all before, and none behind. These were his honours: yet, notwithstanding all this, he had never received any share of those lands which were won from the enemy, but continued to drag on a life of poverty and contempt; while others were possessed of those very territories which his valour had won, without any merit to deserve them, or ever having contributed to the conquest. A case of so much hardship had a strong effect upon the multitude; they unanimously demanded that the law might be passed, and that such merit should not go unrewarded. It was in vain that some of the senators rose up to speak against it; their voices were drowned by the cries of the people. When reason, therefore, could no longer be heard, passion, as usual, succeeded; and the young patricians, running furiously into the throng, broke the balloting urns, and dispersed the multitude that offered to oppose them. For this they were some time after fined by the tribunes; but their resolution, nevertheless, for the present, put off the Agrarian law.

106
Violent disturbances.

107
Ambassadors sent to Athens to bring new laws from thence.

The commonwealth of Rome had now for near 60 years been fluctuating between the contending orders that composed it, till at length, each side, as if weary, were willing to respite a while from the mutual exertions of their claims. The citizens, now, therefore, of every rank, began to complain of the arbitrary decisions of their magistrates, and wished to be guided by a written body of laws, which being known might prevent wrongs as well as punish them. In this both the senate and the people concurred, as hoping that such laws would put an end to the commotions that so long had harassed the state. It was thereupon agreed, that ambassadors should be sent to the Greek cities in Italy, and to Athens, to bring home such laws from

thence as by experience had been found most equitable and useful. For this purpose, three senators, Posthumius, Sulpicius, and Manlius, were fixed upon, and galleys assigned to convoy them, agreeable to the majesty of the Roman people. While they were upon this commission abroad, a dreadful plague depopulated the city at home, and supplied the interval of their absence with other anxiety than that of wishes for their return. In about a year the plague ceased, and the ambassadors returned, bringing home a body of laws, collected from the most civilized states of Greece and Italy, which being afterwards formed into ten tables, and two more being added, made that celebrated code called the *Laws of the Twelve Tables*, many fragments of which remain to this day.

Rome.

The ambassadors were no sooner returned, than the tribunes required that a body of men should be chosen to digest their new laws into proper form, and to give weight to the execution of them. After long debates whether this choice should not be partly made from the people as well as the patricians, it was at last agreed that 10 of the principal senators should be elected, whose power, continuing for a year, should be equal to that of kings and consuls, and that without any appeal. The persons chosen were Appius and Genutius, who had been elected consuls for the ensuing year; Posthumius, Sulpicius, and Manlius, the three ambassadors; Sextus and Romulus, former consuls; with Julius Veturius, and Horatius, senators of the first consideration.

108
Decemviri elected.

The decemviri being now invested with absolute power, agreed to take the reins of government by turns, and that each should dispense justice for a day.

These magistrates, for the first year, wrought with extreme application: and their work being finished, it was expected that they would be contented to give up their offices; but having known the charms of power, they were now unwilling to resign it: they therefore pretended that some laws were yet wanting to complete their design, and intreated the senate for a continuance of their offices; to which that body assented.

109
They become absolute.

But they soon threw off the mask of moderation; and, regardless either of the approbation of the senate or the people, resolved to continue themselves, against all order, in the decemvirate. A conduct so notorious produced discontents; and these were as sure to produce fresh acts of tyranny. The city was become almost a desert, with respect to all who had any thing to lose; and the decemvirs rapacity was then only discontinued, when they wanted fresh objects to exercise it upon. In this state of slavery, proscription, and mutual distrust, not one citizen was found to strike for his country's freedom; these tyrants continued to rule without controul, being constantly guarded, not with their lictors alone, but a numerous crowd of dependents, clients, and even patricians, whom their vices had confederated round them.

110

In this gloomy situation of the state, the Æqui and Volsci, those constant enemies of the Romans, undertook their incursions, resolved to profit by the intestine divisions of the people, and advanced within about 10 miles of Rome.

Invasion of the Æqui and Volsci.

But the decemviri, being put in possession of all the military as well as of the civil power, divided their army

Rome.

111
The Ro-
mans de-
feated.

112
Murder of
Sicinius
Dentatus.

my into three parts; whereof one continued with Appius in the city, to keep it in awe; the other two were commanded by his colleagues, and were led, one against the Æqui, and the other against the Sabines. The Roman soldiers had now got into a method of punishing the generals whom they disliked, by suffering themselves to be vanquished in the field. They put it in practice upon this occasion, and shamefully abandoned their camp upon the approach of the enemy. Never was the news of a victory more joyfully received at Rome than the tidings of this defeat: the generals, as is always the case, were blamed for the treachery of their men: some demanded that they should be deposed; others cried out for a dictator to lead the troops to conquest: but among the rest, old Sicinius Dentatus the tribune spoke his sentiments with his usual openness; and treating the generals with contempt, showed all the faults of their discipline in the camp, and of their conduct in the field. Appius, in the mean time, was not remiss in observing the disposition of the people. Dentatus, in particular, was marked out for vengeance, and, under pretence of doing him particular honour, he was appointed legate, and put at the head of the supplies which were sent from Rome to reinforce the army. The office of legate was held sacred among the Romans, as in it were united the authority of a general, with the reverence due to the priesthood. Dentatus, no way suspecting his design, went to the camp with alacrity, where he was received with all the external marks of respect. But the generals soon found means of indulging their desire of revenge. He was appointed at the head of 100 men to go and examine a more commodious place for encampment, as he had very candidly assured the commanders that their present situation was wrong. The soldiers, however, who were given as his attendants, were assassins; wretches who had long been ministers of the vengeance of the decemviri, and who now engaged to murder him, though with all those apprehensions which his reputation, as he was called the *Roman Achilles*, might be supposed to inspire. With these designs, they led him from the way into the hollow bosom of a retired mountain, where they began to set upon him from behind. Dentatus, now too late, perceived the treachery of the decemviri, and was resolved to sell his life as dearly as he could; he therefore put his back to a rock, and defended himself against those who pressed most closely. Though now grown old, he had still the remains of his former valour, and killed no less than 15 of the assailants, and wounded 30. The assassins now therefore, terrified at his amazing bravery, showered in their javelins upon him at a distance; all which he received in his shield with undaunted resolution. The combat, though so unequal in numbers, was managed for some time with doubtful success, till at length his assailants bethought themselves of ascending the rock against which he stood, and thus poured down stones upon him from above. This succeeded; the old soldier fell beneath their united efforts, after having shown by his death that he owed it to his fortitude, and not his fortune, that he had come off so many times victorious. The decemviri pretended to join in the general sorrow for so brave a man, and decreed him a funeral, with the first military honours: but the greatness of their apparent distress, compared with their

known hatred, only rendered them still more detestable to the people. Rome.

113
Tragical
story of
Virginia.

But a transaction still more atrocious than the former served to inspire the citizens with a resolution to break all measures of obedience, and at last to restore freedom. Appius, who still remained at Rome, sitting one day on his tribunal to dispense justice, saw a maiden of exquisite beauty, and aged about 15, passing to one of the public schools, attended by a matron her nurse. Conceiving a violent passion for her, he resolved to obtain the gratification of his desire, whatever should be the consequence, and found means to inform himself of her name and family. Her name was *Virginia*, the daughter of Virginius a centurion, then with the army in the field; and she had been contracted to Icilius, formerly a tribune of the people, who had agreed to marry her at the end of the present campaign. Appius, at first, resolved to break this match, and to espouse her himself: but the laws of the Twelve Tables had forbidden the patricians to intermarry with the plebeians; and he could not infringe these, as he was the enactor of them. Nothing therefore remained but a criminal enjoyment; which, as he was long used to the indulgence of his passions, he resolved to obtain. After having vainly tried to corrupt the fidelity of her nurse, he had recourse to another expedient, still more guilty. He pitched upon one Claudius, who had long been the minister of his pleasures, to assert the beautiful maid was his slave, and to refer the cause to his tribunal for decision. Claudius behaved exactly according to his instructions; for entering into the school, where Virginia was playing among her female companions, he seized upon her as his property, and was going to drag her away by force, but was prevented by the people drawn together by her cries. At length, after the first heat of opposition was over, he led the weeping virgin to the tribunal of Appius, and there plausibly exposed his pretensions. He asserted, that she was born in his house, of a female slave, who sold her to the wife of Virginius, who had been barren. That he had several credible evidences to prove the truth of what he said; but that, until they could come together, it was but reasonable the slave should be delivered into his custody, being her proper master. Appius seemed to be struck with the justice of his claims. He observed, that if the reputed father himself were present, he might indeed be willing to delay the delivery of the maiden for some time; but that it was not lawful for him, in the present case, to detain her from her master. He therefore adjudged her to Claudius, as his slave, to be kept by him till Virginius should be able to prove his paternity. This sentence was received with loud clamours and reproaches by the multitude: the women, in particular, came round Virginia, as if willing to protect her from the judge's fury; while Icilius, her lover, boldly opposed the decree, and obliged Claudius to take refuge under the tribunal of the decemviri. All things now threatened an open insurrection; when Appius, fearing the event, thought proper to suspend his judgment till the arrival of Virginius, who was then about 11 miles from Rome, with the army. The day following was fixed for the trial; and, in the mean time, Appius sent letters to the generals to confine Virginius, as his arrival in town might only serve to kindle

Rome.

kindle sedition among the people. These letters, however, were intercepted by the centurion's friends, who sent him down a full relation of the design laid against the liberty and the honour of his only daughter. Virginius, upon this, pretending the death of a near relation, got permission to leave the camp, and flew to Rome, inspired with indignation and revenge. Accordingly, the next day he appeared before the tribunal, to the astonishment of Appius, leading his weeping daughter by the hand, both habited in the deepest mourning. Claudius, the accuser, was also there, and began by making his demand. Virginius next spoke in turn: he represented that his wife had many children; that she had been seen pregnant by numbers; that, if he had intentions of adopting a supposititious child, he would have fixed upon a boy rather than a girl; that it was notorious to all, that his wife had herself suckled her own child; and that it was surprising such a claim should be now revived, after a 15 years discontinuance. While the father spoke this with a stern air, Virginia stood trembling by, and, with looks of persuasive innocence, added weight to all his remonstrances. The people seemed entirely satisfied of the hardship of his case, till Appius, fearing what he said might have dangerous effects upon the multitude, interrupted him, under a pretence of being sufficiently instructed in the merits of the cause, and finally adjudged her to Claudius, ordering the lictors to carry her off. The lictors, in obedience to his command, soon drove off the throng that pressed round the tribunal; and now they seized upon Virginia, and were delivering her up into the hands of Claudius, when Virginius, who found that all was over, seemed to acquiesce in the sentence. He therefore mildly intreated Appius to be permitted to take a last farewell of one whom he had long considered as his child; and so satisfied, he would return to his duty with fresh alacrity. With this the decemvir complied, but upon condition that their endearments should pass in his presence. Virginius, with the most poignant anguish, took his almost expiring daughter in his arms, for a while supported her head upon his breast, and wiped away the tears that rolled down her lovely visage; and happening to be near the shops that surrounded the forum, he snatched up a knife that lay on the shambles, and buried the weapon in her breast; then holding it up, reeking with the blood of his daughter, "Appius (he cried) by this blood of innocence, I devote thy head to the infernal gods." Thus saying, with the bloody knife in his hand, and threatening destruction to whomsoever should oppose him, he ran through the city, wildly calling upon the people to strike for freedom, and from thence went to the camp, in order to spread a like flame through the army.

He no sooner arrived at the camp, followed by a number of his friends, but he informed the army of all that was done, still holding the bloody knife in his hand. He asked their pardon, and the pardon of the gods, for having committed so rash an action, but ascribed it all to the dreadful necessity of the times. The army, already predisposed, immediately with shouts echoed their approbation; and decamping, left their generals behind, to take their station once more upon mount Aventine, whither they had retired about 40

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years before. The other army, which had been to oppose the Sabines, seemed to feel a like resentment, and came over in large parties to join them.

Appius, in the mean time, did all he could to quell the disturbances in the city; but finding the tumult incapable of controul, and perceiving that his mortal enemies, Valerius and Horatius, were the most active in opposition, at first attempted to find safety by flight; nevertheless, being encouraged by Oppius, who was one of his colleagues, he ventured to assemble the senate, and urged the punishment of all deserters. The senate, however, were far from giving him the relief he sought for; they foresaw the dangers and miseries that threatened the state, in case of opposing the incensed army; they therefore dispatched messengers to them, offering to restore their former mode of government. To this proposal all the people joyfully assented, and the army gladly obeyed. Appius and Oppius, one of his colleagues, both died by their own hands in prison. The other eight decemvirs went into voluntary exile; and Claudius, the pretended master of Virginia, was driven out after them.

The tribunes now grew more turbulent: they proposed two laws; one to permit plebeians to intermarry with patricians; and the other, to permit them to be admitted to the consulship also. The senators received these proposals with indignation, and seemed resolved to undergo the utmost extremities rather than submit to enact them. However, finding their resistance only increase the commotions of the state, they at last consented to pass the law concerning intermarriages, hoping that this concession would satisfy the people. But they were to be appeased but for a very short time: for, returning to their old custom of refusing to enlist upon the approach of an enemy, the consuls were forced to hold a private conference with the chief of the senate; where, after many debates, Claudius proposed an expedient as the most probable means of satisfying the people in the present conjuncture. This was, to create six or eight governors in the room of consuls, whereof one half at least should be patricians. This project was eagerly embraced by the people; yet so fickle were the multitude, that though many of the plebeians stood, the choice wholly fell upon the patricians who offered themselves as candidates. These new magistrates were called *military tribunes*; they were at first but three, afterwards they were increased to four, and at length to six. They had the power and ensigns of consuls; yet that power being divided among a number, each singly was of less authority. The first that were chosen only continued in office about three months, the augurs having found something amiss in the ceremonies of their election.

The military tribunes being deposed, the consuls once more came into office; and, in order to lighten the weight of business which they were obliged to sustain, a new office was erected, namely, that of *censors*, to be chosen every fifth year. Their business was to take an estimate of the number and estates of the people, and to distribute them into their proper classes; to inspect into the lives and manners of their fellow-citizens; to degrade senators for misconduct; to dismount knights; and to turn down plebeians from their tribes into an inferior, in case of misdemeanour. The two first

Y y

censors

Rome.

114

The decemvirate abolished.

115

New disturbances.

116

Military tribunes elected.

117

The office of censor instituted.

Rome. censors were Papirius and Sempronius, both patricians; and from this order they continued to be elected for near 100 years.

This new creation served to restore peace for some time among the orders; and the triumph gained over the Volscians by Geganius the consul, added to the universal satisfaction that reigned among the people.

This calm, however, was but of short continuance: for, some time after, a famine pressing hard upon the poor, the usual complaints against the rich were renewed; and these, as before, proving ineffectual, produced new seditions. The consuls were accused of neglect in not having laid in proper quantities of corn: they, however, disregarded the murmurs of the populace, content with exerting all their care in attempts to supply the pressing necessities. But though they did all that could be expected from active magistrates, in providing and distributing provisions to the poor; yet Spurius Mælius, a rich knight, who had bought up all the corn of Tuscany, by far outshone them in liberality. This demagogue, inflamed with a secret desire of becoming powerful by the contentions in the state, distributed corn in great quantities among the poorer sort each day, till his house became the asylum of all such as wished to exchange a life of labour for one of lazy dependence. When he had thus gained a sufficient number of partizans, he procured large quantities of arms to be brought into his house by night, and formed a conspiracy, by which he was to obtain the command, while some of the tribunes, whom he had found means to corrupt, were to act under him, in seizing upon the liberties of his country. Minucius soon discovered the plot; and informing the senate thereof, they immediately formed the resolution of creating a dictator, who should have the power of quelling the conspiracy, without appealing to the people. Cincinnatus, who was now 80 years old, was chosen once more to rescue his country from impending danger. He began by summoning Mælius to appear; who refused to obey. He next sent Ahala, the master of his horse, to force him; who, meeting him in the forum, and pressing Mælius to follow him to the dictator's tribunal, upon his refusal Ahala killed him upon the spot. The dictator applauded the resolution of his officer, and commanded the conspirator's goods to be sold, and his house to be demolished, distributing his stores among the people.

The tribunes of the people were much enraged at the death of Mælius; and, in order to punish the senate, at the next election, instead of consuls, insisted upon restoring their military tribunes. With this the senate were obliged to comply. The next year, however, the government returned to its ancient channel, and consuls were chosen.

118 Disturbances by Mælius a knight
119 Who is killed.
120 The destruction of Veii resolved.
The Veientes had long been the rivals of Rome; they had ever taken the opportunity of its internal distresses to ravage its territories, and had even threatened its ambassadors, sent to complain of these injuries, with outrage. In war they had been extremely formidable, and had cut off almost all the Fabian family; who, to the number of 306 persons, had voluntarily undertaken to defend the frontiers against their incursions. It seemed now therefore determined, that the city of Veii, whatever it should cost, was to fall; and the Romans accordingly sat regularly down before

Rome. it, prepared for a long and painful resistance. The strength of the place, or the unskilfulness of the besiegers, may be inferred from the continuance of the siege, which lasted for 10 years; during which time the army continued encamped round it, lying in winter under tents made of the skins of beasts, and in summer driving on the operations of the attack. Various was the success, and many were the commanders that directed the siege: sometimes all the besiegers works were destroyed, and many of their men cut off by sallies from the town; sometimes they were annoyed by an army of Veians, who attempted to bring assistance from without. A siege so bloody seemed to threaten depopulation to Rome itself, by draining its forces continually away; so that a law was obliged to be made for all the bachelors to marry the widows of the soldiers who were slain. In order to carry it on with greater vigour, Furius Camillus was created dictator, and to him was intrusted the sole power of managing the long protracted war. Camillus, who, without intrigue or any solicitation, had raised himself to the first eminence in the state, had been made one of the censors some time before, and was considered as the head of that office; he was afterwards made a military tribune, and had in this post gained several advantages over the enemy. It was his great courage and abilities in the above offices that made him thought most worthy to serve his country on this pressing occasion. Upon his appointment, numbers of the people flocked to his standard, confident of success under so experienced a commander. Conscious, however, that he was unable to take the city by storm, he secretly wrought a mine into it with vast labour, which opened into the midst of the citadel. Certain thus of success, and finding the city incapable of relief, he sent to the senate, desiring that all who chose to share in the plunder of Veii should immediately repair to the army. Then giving his men directions how to enter at the breach, the city was instantly filled with his legions, to the amazement and consternation of the besieged, who, but a moment before, had rested in perfect security. Thus, like a second Troy, was the city of Veii taken, after a 10 years siege, and with its spoils enriched the conquerors; while Camillus himself, transported with the honour of having subdued the rival of his native city, triumphed after the manner of the kings of Rome, having his chariot drawn by four milk-white horses; a distinction which did not fail to disgust the majority of the spectators, as they considered those as sacred, and more proper for doing honour to their gods than their generals.

121 His generosity to the Falisci.
His usual good fortune attended Camillus in another expedition against the Falisci; he routed their army, and besieged their capital city Falerii, which threatened a long and vigorous resistance. Here a schoolmaster, who had the care of the children belonging to the principal men of the city, having found means to decoy them into the Roman camp, offered to put them into the hands of Camillus, as the surest means of inducing the citizens to a speedy surrender. The general was struck with the treachery of a wretch whose duty it was to protect innocence, and not to betray it; and immediately ordered him to be stripped, his hands tied behind him, and in that ignominious manner to be whipped into the town by his own scholars.

Rome. This generous behaviour in Camillus effected more than his arms could do: the magistrates of the town immediately submitted to the senate, leaving to Camillus the conditions of their surrender; who only fined them in a sum of money to satisfy his army, and received them under the protection and into the alliance of Rome.

123
He goes in-
to volun-
tary exile.

Notwithstanding the veneration which the virtues of Camillus had excited abroad, they seemed but little adapted to bring over the respect of the turbulent tribunes at home, as they raised some fresh accusation against him every day. To their other charges they added that of his having concealed a part of the plunder of Veii, particularly two brazen gates, for his own use; and appointed him a day on which to appear before the people. Camillus, finding the multitude exasperated against him upon many accounts, detesting their ingratitude, resolved not to wait the ignominy of a trial; but, embracing his wife and children, prepared to depart from Rome. He had already passed as far as one of the gates, unattended on his way, and unlamented. There he could suppress his indignation no longer; but, turning his face to the capitol, and lifting up his hands to heaven, intreated all the gods that his country might one day be sensible of their injustice and ingratitude; and so saying, he passed forward to take refuge at Ardea, where he afterwards learned that he had been fined 1500 asces by the tribunes at home.

124
Italy inva-
ded by the
Gauls.

The Romans indeed soon had reason to repent their usage of Camillus; for now a more formidable enemy than ever they had met with threatened the republic: an inundation of Gauls, leaving their native woods, under the command of one Brennus, wasted every thing with fire and sword. It is said that one Cœditiæ, a man of the lowest rank, pretended to have heard a miraculous voice, which pronounced distinctly these words: "Go to the magistrates, and tell them that the Gauls draw near." The meanness of the man made his warning despised; though, when the event showed the truth of his prediction, Camillus erected a temple to the unknown Deity, and the Romans invented for him the name of *Aius Locutius*. Messenger after messenger arrived with the news of the progress and devastations of the Gauls; but the Romans behaved with as much security as if it had been impossible for them to have felt the effects of their depredations. At last envoys arrived at Rome, imploring the assistance of the republic against an army of Gauls, which had made an irruption into Italy, and now besieged their city. The occasion of the irruption and siege was this: Arunx, one of the chief men of Clusium in *Hetruria*, had been guardian to a young *lucumo*, or lord of a *lucumony*, and had educated him in his house from his infancy. The *lucumo*, as soon as he was of an age to feel the force of passion, fell in love with his guardian's wife; and, upon the first discovery of their intrigue, conveyed her away. Arunx endeavoured to obtain reparation for the injury he had received; but the *lucumo*, by his interest and money, gained over the magistrates: so that the injured guardian, finding no protectors in *Hetruria*, resolved to make his application to the Gauls. The people among all the Celtic nations, to whom he chose to address himself, were the *Senones*; and, in order to en-

125
Occasion of
their inva-
sion.

gage them in his quarrel, he acquainted them with the great plenty of Italy, and made them taste of some Italian wines. Upon this the *Senones* resolved to follow him; and a numerous army was immediately formed, which passing the Alps, under the conduct of their *Hetrurian* guide, and leaving the *Celtæ* in Italy unmolested, fell upon *Umbria*, and possessed themselves of all the country from *Ravenna* to *Picenum*. They were about six years in settling themselves in their new acquisitions, while the Romans were carrying on the siege of *Veii*. At length *Arunx* brought the *Senones* before *Clusium*, in order to besiege that place, his wife and her lover having shut themselves up there.

The senate, being unwilling to engage in an open war with a nation which had never offended them, sent an embassy of three young patricians, all brothers, and of the *Fabian* family, to bring about an accommodation between the two nations. These ambassadors, being arrived at the camp of the Gauls, and conducted into the council, offered the mediation of Rome; and demanded of *Brennus*, the leader of the Gauls, What injury the *Clusini* had done him; or what pretensions any people from a remote country could have upon *Hetruria*? *Brennus* answered proudly, that his right lay in his sword, and that all things belonged to the brave; but that, without having recourse to this primitive law of nature, he had a just complaint against the *Clusians*, who, having more lands than they could cultivate, had refused to yield to him those they left untilld: And what other motives had you yourselves, Romans (said he), to conquer so many neighbouring nations? You have deprived the *Sabines*, the *Albans*, the *Fidenates*, the *Æqui*, and the *Volsci*, of the best part of their territories. Not that we accuse you of injustice; but it is evident, that you thought this to be the prime and most ancient of all laws, to make the weak give way to the strong. Forbear therefore to interest yourselves for the *Clusini*, or allow us to take the part of the people you have subdued."

The *Fabii* were highly provoked at so haughty an answer; but, dissembling their resentment, desired leave to go into the town, under pretence of conferring with the magistrates. But they were no sooner there, than they began to stir up the inhabitants to a vigorous defence; nay, forgetting their character, they put themselves at the head of the besieged in a sally, in which *Q. Fabius*, the chief of the ambassadors, slew with his own hand one of the principal officers of the Gauls. Hereupon *Brennus*, calling the gods to witness the perfidiousness of the Romans, and their violating the law of nations, immediately broke up the siege of *Clusium*, and marched leisurely to *Rome*, having sent an herald before him to demand that those ambassadors, who had so manifestly violated the law of nations, should be delivered up to him. The Roman senate was greatly perplexed between their regard for the law of nations and their affection for the *Fabii*. The wisest of the senate thought the demand of the Gauls to be but just and reasonable: however, as it concerned persons of great consequence and credit, the conscript fathers referred the affair to the people assembled by *curiæ*. As the *Fabian* family was very popular, the *curiæ* were so far from condemning the three brothers, that, at the next election of military tribunes, they were chosen the first.

126

The Ro-
mans send
an embassy
to them.

127

Imprudent
conduct of
the ambas-
sadors.

128

The Gauls
require
them to be
delivered
up to them
but are re-
fused.

Rome. first. Brennus, looking upon the promotion of the Fabii as a high affront on his nation, hastened his march to Rome.

129
The Romans entirely defeated.

As his army was very numerous, the inhabitants of the towns and villages through which he passed left their habitations at his approach; but he stopped nowhere, declaring that his design was only to be revenged on the Romans. The six military tribunes, to wit, Q. Fabius, Cæso Fabius, Caius Fabius, Q. Sulpitius, Q. Servilius, and Sextus Cornelius, marched out of Rome at the head of 40,000 men, without either sacrificing to the gods or consulting the auspices; essential ceremonies among a people that drew their courage and confidence from the propitious signs which the augurs declared to them. As most of the military tribunes were young, and men of more valour than experience, they advanced boldly against the Gauls, whose army was 70,000 strong. The two armies met near the river Allia, about 60 furlongs from Rome. The Romans, that they might not be surrounded by the enemy, extended their wings so far as to make their centre very thin. Their best troops, to the number of 24,000 men, they posted between the river and the adjoining hills; the rest they placed on the hills. The Gauls first attacked the latter, who being soon put into confusion, the forces in the plain were struck with such terror that they fled without drawing their swords. In this general disorder, most of the soldiers, instead of returning to Rome fled to Veii: some were drowned as they endeavoured to swim across the Tiber; many fell in the pursuit by the sword of the conquerors; and some got to Rome, which they filled with terror and consternation, it being believed there that all the rest were cut off. The day after the battle, Brennus marched his troops into the neighbourhood of Rome, and encamped on the banks of the Anio. Thither his scouts brought him word, that the gates of the city lay open, and that not one Roman was to be seen on the ramparts. This made him apprehensive of some ambuscade, it being unreasonable to suppose that the Romans would abandon their city to be plundered and sacked without making any resistance. On this consideration he advanced slowly, which gave the Romans an opportunity to throw into the Capitol all the men who were fit to bear arms.

130
They retired into the Capitol.

They carried into it all the provisions they could get; and, that they might last the longer, admitted none into the place but such as were capable of defending it.

131
Origin of the word ceremonies.

As for the city, they had not sufficient forces to defend it; and therefore the old men, women, and children, seeing themselves abandoned, fled to the neighbouring towns. The Vestals, before they left Rome, took care to hide every thing appropriated to the gods which they could not carry off. The two palladiums, and the sacred fire, they took with them. When they came to the Janiculus, one Albinus, a plebeian, who was conveying his wife and children in a carriage to a place of safety, seeing the sacred virgins bending under their load, and their feet bloody, made his family alight, put the priestesses and their gods into the carriage, and conducted them to Cære, a city of Hetruria, where they met with a favourable reception. The Vestals remained at Cære, and there continued to perform the usual rites of religion; and hence those rites were called *ceremonies*. But while the rest of the citizens at Rome were providing for their safety, about 80

of the most illustrious and venerable old men, rather than fly from their native city, chose to devote themselves to death by a vow, which Fabius the high pontiff pronounced in their names. The Romans believed, that, by these voluntary devotements to the infernal gods, disorder and confusion was brought among the enemy. Of these brave old men some were pontiffes, others had been consuls, and others generals of armies, who had been honoured with triumphs. To complete their sacrifice with a solemnity and pomp becoming the magnanimity and constancy of the Romans, they dressed themselves in their pontifical, consular, and triumphal robes; and repairing to the forum, seated themselves there in their curule chairs, expecting the enemy and death with the greatest constancy.

At length Brennus, having spent three days in useless precautions, entered the city the fourth day after the battle. He found the gates open, the walls without defence, and the houses without inhabitants. Rome appeared to him like a mere desert; and this solitude increased his anxiety. He could not believe, either that all the Romans were lodged in the Capitol, or that so numerous a people should abandon the place of their nativity. On the other hand, he could nowhere see any armed men but on the walls of the citadel. However, having first secured all the avenues to the Capitol with strong bodies of guards, he gave the rest of his soldiers leave to disperse themselves all over the city and plunder it. Brennus himself advanced into the forum with the troops under his command, in good order; and there he was struck with admiration at the unexpected sight of the venerable old men who had devoted themselves to death. Their magnificent habits, the majesty of their countenances, the silence they kept, their modesty and constancy at the approach of his troops, made him take them for so many deities: for they continued as motionless as statues, and saw the enemy advance without showing the least concern. The Gauls kept a great while at an awful distance from them, being afraid to come near them. But at length one soldier bolder than the rest, having out of curiosity touched the beard of M. Papirius, the venerable old man, not being used to such familiarity, gave him a blow on the head with his ivory staff. The soldier in revenge immediately killed him; and the rest of the Gauls following his example, slaughtered all those venerable old men without mercy.

After this the enemy set no bounds to their rage and fury. They plundered all places, dragging such of the Romans as had shut themselves up in their houses into the streets, and there putting them to the sword without distinction of age or sex. Brennus then invested the Capitol; but being repulsed with great loss, in order to be revenged of the Romans for their resistance, he resolved to lay the city in ashes. Accordingly, by his command, the soldiers set fire to the houses, demolished the temples and public edifices, and raised the walls to the ground. Thus was the famous city of Rome entirely destroyed; nothing was to be seen in the place where it stood but a few little hills covered with ruins, and a wide waste, in which the Gauls who invested the Capitol were encamped. Brennus, finding he should never be able to take a place which nature had so well fortified otherwise than by famine, turned the siege into a blockade. But in the mean time, his army

Rome.

132
Rome pillaged and burnt.

133
They invested the Capitol.

Rome.

army being distressed for want of provisions, he sent out parties to pillage the fields, and raise contributions in the neighbouring cities. One of these parties appeared before Ardea, where the great Camillus had now spent two years in a private life. Notwithstanding the affront he had received at Rome, the love he bore his country was not in the least diminished. The senate of Ardea being met to deliberate on the measures to be taken with relation to the Gauls, Camillus, more afflicted at the calamities of his country than at his own banishment, desired to be admitted into the council, where, with his eloquence, he prevailed upon the Ardeates to arm their youth in their own defence, and refuse the Gauls admittance into their city.

134
A great
number of
them cut off
by Camil-
lus.

Hereupon the Gauls encamped before the city; and as they despised the Ardeates after they had made themselves masters of Rome, they preserved neither order nor discipline in the camp, but spent whole days in drinking. Hereupon Camillus, having easily persuaded the youth of the city to follow him, marched out of Ardea in a very dark night, surprised the Gauls drowned in wine, and made a dreadful slaughter of them. Those who made their escape under the shelter of the night fell next day into the hands of the peasants, by whom they were massacred without mercy. This defeat of the enemy revived the courage of the Romans scattered about the country, especially of those who had retired to Veii after the unfortunate battle of Allia. There was not one of them who did not condemn himself for the exile of Camillus, as if he had been the author of it; and looking upon that great man as their last resource, they resolved to choose him for their leader. Accordingly, they sent without delay ambassadors to him, beseeching him to take into his protection the fugitive Romans, and the wrecks of the defeat at Allia. But Camillus would not accept of the command of the troops till the people assembled by curiæ had legally conferred it upon him. He thought the public authority was lodged in the hands of those who were shut up in the citadel, and therefore would undertake nothing at the head of the Roman troops till a commission was brought him from thence.

To do this was very difficult, the place being invested on all sides by the enemy. However, one Pontius Cominius, a man of mean birth, but bold, and very ambitious of glory, undertook it. He put on a light habit, and, providing himself with cork to keep the longer above water, threw himself into the Tiber above Rome in the beginning of the night, and suffered himself to be carried down with the stream. At length he came to the foot of the capitol, and landed at a steep place where the Gauls had not thought it necessary to post any centinels. There he mounted with great difficulty to the rampart of the citadel; and having made himself known to the guards, he was admitted into the place, and conducted to the magistrates. The senate being immediately assembled, Pontius gave them an account of Camillus's victory; and in the name of all the Romans at Veii demanded that great captain for their general. There was not much time spent in debates: the curiæ being called together, the act of condemnation which had been passed on Camillus was abrogated, and he named dictator with one voice. Pontius was immediately dispatched with the decree; and the same good fortune which had attended him to the capitol accom-

135
Heischosen
dictator.

panied him in his return. Thus was Camillus, from the state of banishment, raised at once to be sovereign magistrate of his country. His promotion to the command was no sooner known, but soldiers flocked from all parts to his camp; insomuch that he soon saw himself at the head of above 40,000 men, partly Romans and partly allies, who all thought themselves invincible under so great a general.

While he was taking proper measures to raise the blockade of the citadel, some Gauls rambling round the place, perceived on the side of the hill the print of Pontius's hands and feet. They observed likewise, that the moss on the rocks was in several places torn up. From these marks they concluded, that somebody had lately gone up to and returned from the capitol. The Gauls immediately made their report to Brennus of what they had observed; and that experienced commander laid a design, which he imparted to nobody, of surprising the place by the same way that the Roman had ascended. With this view he chose out of the army such soldiers as had dwelt in mountainous countries, and been accustomed from their youth to climb precipices. These he ordered, after he had well examined the nature of the place, to ascend in the night the same way that was marked out for them; climbing two abreast, that one might support the other in getting up the steep parts of the precipice. By this means they advanced with much difficulty from rock to rock, till they arrived at the foot of the wall. They proceeded with such silence, that they were not discovered or heard, either by the centinels who were upon guard in the citadel, or even by the dogs, that are usually awaked and alarmed at the least noise. But though they eluded the sagacity of the dogs, they could not escape the vigilance of the geese. A flock of these birds was kept in a court of the capitol in honour of Juno, and near her temple. Notwithstanding the want of provisions in the garrison, they had been spared out of religion; and as these creatures are naturally quick of hearing, they were alarmed at the first approach of the Gauls; so that running up and down, with their cackling and beating of their wings, they awaked Manlius, a gallant soldier, who some years before had been consul. He sounded an alarm, and was the first man who mounted the rampart, where he found two Gauls already upon the wall. One of these offered to discharge a blow at him with his battle-ax; but Manlius cut off his right hand at one blow, and gave the other such a push with his buckler, that he threw him headlong from the top of the rock to the bottom. He, in his fall, drew many others with him; and, in the mean time, the Romans crowding to the place, pressed upon the Gauls, and tumbled them one over another. As the nature of the ground would not suffer them to make a regular retreat, or even to fly, most of them, to avoid the swords of the enemy, threw themselves down the precipice, so that very few got safe back to their camp.

As it was the custom of the Romans at that time not to suffer any commendable action to go unrewarded, the tribune Sulpitius assembled his troops the next morning, in order to bestow the military rewards on those who, the night before, had deserved them. Among these Manlius was first named; and, in acknowledgment of the important service he had just rendered the state, every soldier gave him part of the corn which he received.

Rome.

136
The Gauls
endeavour
to surprise
the Capi-
tol;

137
But are dis-
covered and
repulsed.

Rome.

ved sparingly from the public stock, and a little measure of wine out of his scanty allowance. An inconsiderable present indeed in itself, but very acceptable at that time to the person on whom it was bestowed. The tribune's next care was to punish the negligent: accordingly the captain of the guard, who ought to have had an eye over the centinels, was condemned to die, and, pursuant to his sentence, thrown down from the top of the capitol. The Romans extended their punishments and rewards even to the animals. Geese were ever after had in honour at Rome, and a flock of them always kept at the expence of the public. A golden image of a goose was erected in memory of them, and a goose every year carried in triumph upon a soft litter finely adorned; whilst dogs were held in abhorrence by the Romans, who every year impaled one of them on a branch of elder.

The blockade of the Capitol had already lasted seven months; so that the famine began to be very sensibly felt both by the besieged and besiegers. Camillus, since his nomination to the dictatorship, being master of the country, had posted strong guards on all the roads; so that the Gauls dared not stir out for fear of being cut to pieces. Thus Brennus, who besieged the Capitol, was besieged himself, and suffered the same inconveniences which he made the Romans undergo. Besides, a plague raged in his camp, which was placed in the midst of the ruins of the demolished city, his men lying confusedly among the dead carcases of the Romans, whom they had slain, and not buried. So great a number of them died in one quarter of the city, that it was afterwards called *Byssa Gallica*, or the place where the dead bodies of the Gauls were burnt. But, in the mean time, the Romans in the Capitol were more pinched with want than the Gauls. They were reduced to the last extremity, and at the same time ignorant both of the lamentable condition to which the enemy's army was brought, and of the steps Camillus was taking to relieve them. That great general only waited for a favourable opportunity to fall upon the enemy; but, in the mean time, suffered them to pine away in their infected camp, not knowing the extreme want the Romans endured in the Capitol, where they were so destitute of all sorts of provisions, that they could no longer subsist. Matters being brought to this sad pass on both sides, the centinels of the Capitol, and those of the enemy's army, began to talk to one another of an accommodation. Their discourses came at length to the ears of their leaders, who were not averse to the design.

The senate, not knowing what was become of Camillus, and finding themselves hard pinched by hunger, resolved to enter upon a negotiation, and empowered Sulpitius, one of the military tribunes, to treat with the Gauls; who made no great difficulty in coming to terms, they being no less desirous than the Romans to put an end to the war. In a conference, therefore, between Brennus and Sulpitius, an agreement was made, and sworn to. The Romans were to pay to the Gauls 1000 pounds weight of gold, that is, 45,000*l*. Sterling; and the latter were to raise the siege of the Capitol, and quit all the Roman territories. On the day appointed, Sulpitius brought the sum agreed on, and Brennus the scales and weights; for there were no gold or silver coins at that time, metals passing only by

weight. We are told, that the weights of the Gauls were false, and their scales untrue; which Sulpitius complaining of, Brennus, instead of redressing the injustice, threw his sword and belt into the scale where the weights were; and when the tribune asked him the meaning of so extraordinary a behaviour, the only answer he gave was, *Vae victis!* "Wo to the conquered!" Sulpitius was so stung with this haughty answer, that he was for carrying the gold back into the Capitol, and sustaining the siege to the last extremity; but others thought it advisable to put up the affront, since they had submitted to a far greater one, which was to pay any thing at all.

During these disputes of the Roman deputies among themselves and with the Gauls, Camillus advanced with his army to the very gates of the city; and being there informed of what was doing, he commanded the main body to follow him slowly and in good order, while he, with the choicest of his men, hastened to the place of the parley. The Romans, overjoyed at his unexpected arrival, opened to make room for him as the supreme magistrate of the republic, gave him an account of the treaty they had made with the Gauls, and complained of the wrong Brennus did them in the execution of it. They had scarce done speaking, when Camillus cried out, "Carry back this gold into the Capitol; and you, Gauls, retire with your scales and weights. Rome must not be redeemed with gold, but with steel. Brennus replied, That he contravened a treaty which was concluded and confirmed with mutual oaths. "Be it so (answered Camillus); yet it is of no force, having been made by an inferior magistrate, without the privacy or consent of the dictator. I, who am invested with the supreme authority over the Romans, declare the contract void." At these words Brennus flew into a rage; and both sides drawing their swords, a confused scuffle ensued among the ruins of the houses, and in the narrow lanes. The Gauls, after an inconsiderable loss, thought fit to retire within their camp; which they abandoned in the night, not caring to engage Camillus's whole army, and, having marched eight miles, encamped on the Gabinian way. Camillus pursued them as soon as it was day, and, coming up with them, gave them a total overthrow. The Gauls, according to Livy, made but a faint resistance, being disheartened at the loss they had sustained the day before. It was not, says that author, so much a battle as a slaughter. Many of the Gauls were slain in the action, more in the pursuit; but the greater number were cut off, as they wandered up and down in the fields, by the inhabitants of the neighbouring villages. In short, there was not one single Gaul left to carry to his countrymen the news of this fatal catastrophe. The camp of the barbarians was plundered; and Camillus, loaded with spoils, returned in triumph to the city, the soldiers in their songs styling him, *Romulus, Father of his country, and Second founder of Rome.*

As the houses of Rome were all demolished, and the walls razed, the tribunes of the people renewed, with more warmth than ever, an old project which had occasioned great disputes. They had formerly proposed a law for dividing the senate and government between the cities of Veii and Rome. Now this law was revived; nay, most of the tribunes were for entirely abandoning their old ruined city, and making Veii the sole seat

Rome.

139
Camillus
drives away
the Gauls.

140
The Gauls
entirely cut
off.

141
Disputes
about re-
moving to
Veii.

138
The Ro-
mans agree
to pay 1000
pounds of
gold for
their ran-
som.

Rome. seat of the empire. The people were inclined to favour the project, Veii offering them a place fortified by art and nature, good houses ready built, a wholesome air, and a fruitful territory. On the other hand, they had no materials for rebuilding a whole city, were quite exhausted by misfortunes, and even their strength was greatly diminished. This gave them a reluctance to so great an undertaking, and emboldened the tribunes to utter seditious harangues against Camillus, as a man too ambitious of being the restorer of Rome. They even insinuated that the name of Romulus, which had been given him, threatened the republic with a new king. But the senate took the part of Camillus, and, being desirous to see Rome rebuilt, continued him, contrary to custom, a full year in the office of dictator; during which time he made it his whole business to suppress the strong inclination of the people to remove to Veii. Having assembled the curiæ, he expostulated with them upon the matter; and, by arguments drawn from prudence, religion, and glory, prevailed upon them to lay aside all thoughts of leaving Rome. As it was necessary to have the resolution of the people confirmed by the senate, the dictator reported it to the conscript fathers, leaving every one at full liberty to vote as he pleased. While L. Lucretius, who was to give his opinion the first, was beginning to speak, it happened that a centurion, who with his company had been upon guard, and was then marching by the senate-house, cried out aloud, "Plant your colours, ensign; this is the best place to stay in." These words were considered as dictated by the gods themselves; and Lucretius, taking occasion from them to urge the necessity of staying at Rome, "An happy omen, (cried he); I adore the gods who gave it." The whole senate applauded his words; and a decree was passed without opposition for rebuilding the city.

142
Marcus
Manlius
rewarded.

Though the tribunes of the people were defeated by Camillus in this point, they resolved to exercise their authority against another patrician, who had indeed deserved punishment. This was Q. Fabius, who had violated the law of nations, and thereby provoked the Gauls, and occasioned the burning of Rome. His crime being notorious, he was summoned by C. Martius Rutilus before the assembly of the people, to answer for his conduct in his embassy. The criminal had reason to fear the severest punishment; but his relations gave out that he died suddenly; which generally happened when the accused person had courage enough to prevent his condemnation, and the shame of a public punishment. On the other hand, the republic gave an house situated on the Capitol to M. Manlius, as a monument of his valour, and of the gratitude of his fellow-citizens. Camillus closed this year by laying down his dictatorship: whereupon an interregnum ensued, during which he governed the state alternately with P. Cornelius Scipio; and it fell to his lot to preside at the election of new magistrates, when L. Valerius Poplicola, L. Virginus Tricoftus, P. Cornelius Cossus, A. Manlius Capitolinus, L. Æmilius Mamercinus, and L. Posthumius Albinus, were chosen. The first care of these new magistrates was to collect all the ancient monuments of the religion and civil laws of Rome which could be found among the ruins of the demolished city. The laws of the twelve tables, and some of the laws of the kings, had been written on brass, and

fixed up in the forum; and the treaties made with several nations had been engraved on pillars erected in the temples. Pains were therefore taken to gather up the ruins of these precious monuments; and what could not be found was supplied by memory. The pontifices, on their part, took care to re-establish the religious ceremonies, and made also a list of lucky and unlucky days.

And now the governors of the republic applied themselves wholly to rebuild the city. Plutarch tells us, that as the workmen were digging among the ruins of the temple of Mars, they found Romulus's augural staff untouched by the flames; and that this was looked upon as a prodigy, from whence the Romans inferred that their city would continue for ever. The expence of building private houses was partly defrayed out of the public treasure. The ædiles had the direction of the works; but they had so little taste for order or beauty, that the city, when rebuilt, was even less regular than in the time of Romulus. And though in Augustus's time, when Rome became the capital of the known world, the temples, palaces, and private houses, were built in a more magnificent manner than before; yet even then these new decorations did not rectify the faults of the plan upon which the city had been built after its first demolition.

143
The city
rebuilt.

Rome was scarce restored, when her citizens were alarmed by the news that all her neighbours were combining to her destruction. The Æqui, the Volsci, the Hetrurians, and even her old friends the Latins and the Hernici, entered into an alliance against her, in hopes of oppressing her before she had recovered her strength. The republic, under this terror, nominated Camillus dictator a third time. This great commander, having appointed Servilius to be his general of horse, summoned the citizens to take arms, without excepting even the old men. He divided the new levies into three bodies. The first, under the command of A. Manlius, he ordered to encamp under the walls of Rome; the second he sent into the neighbourhood of Veii; and marched himself at the head of the third, to relieve the tribunes, who were closely besieged in their camp by the united forces of the Volsci and Latins. Finding the enemy encamped near Lanuvium, on the declivity of the hill Marcius, he posted himself behind it, and, by lighting fires, gave the distressed Romans notice of his arrival. The Volsci and Latins, when they understood that Camillus was at the head of an army newly arrived, were so terrified, that they shut themselves up in their camp, which they fortified with great trees cut down in haste. The dictator, observing that this barrier was of green wood, and that every morning there arose a great wind, which blew full upon the enemy's camp, formed the design of taking it by fire. With this view he ordered one part of his army to go by break of day with fire-brands to the windward side of the camp, and the other to make a brisk attack on the opposite side. By this means the enemy were entirely defeated, and their camp taken. Camillus then commanded his men to extinguish the flames, in order to save the booty, with which he rewarded his army. He then left his son in the camp to guard the prisoners; and, entering the country of the Æqui, made himself master of their capital city Bola. From thence he marched against the Volsci; whom

144
A general
combination
against
the Ro-
mans.

145
Camillus
defeats the
Volsci and
Latins.

Rome. whom he entirely reduced, after they had waged war with the Romans for the space of 107 years. Having subdued this untractable people, he penetrated into Hetruria, in order to relieve Sutrium, a town in that country in alliance with Rome, and besieged by a numerous army of Hetrurians. But, notwithstanding all the expedition Camillus could use, he did not reach the place before it had capitulated. The Sutrini, being greatly distressed for want of provisions, and exhausted with labour, had surrendered to the Hetrurians, who had granted them nothing but their lives, and the cloaths on their backs. In this destitute condition they had left their own country, and were going in search of new habitations, when they met Camillus leading an army to their relief.

146
And the
Hetrurians.

The unfortunate multitude no sooner saw the Romans, but they threw themselves at the dictator's feet, who, moved at this melancholy sight, desired them to take a little rest, and refresh themselves, adding, that he would soon dry up their tears, and transfer their sorrows from them to their enemies. He imagined, that the Hetrurians would be wholly taken up in plundering the city, without being upon their guard, or observing any discipline. And herein he was not mistaken. The Hetrurians did not dream that the dictator could come so speedily from such a distance to surprise them; and therefore were wholly employed in plundering the houses and carrying off the booty, or feasting on the provisions they had found in them. Many of them were put to the sword, and an incredible number made prisoners; and the city was restored to its ancient inhabitants, who had not waited in vain for the performance of the dictator's promise. And now, after these glorious exploits, which were finished in so short a time, the great Camillus entered Rome in triumph a third time.

Camillus having resigned his dictatorship, the republic chose six new military tribunes, Q. Quinctius, Q. Servius, L. Julius, L. Aquilius, L. Lucretius, and Ser. Sulpitius. During their administration the country of the Æqui was laid waste, in order to put it out of their power to revolt anew; and the two cities of Cortuosa and Contenebra, in the lucumony of the Tarquinienses, were taken from the Hetrurians, and entirely demolished. At this time it was thought proper to repair the Capitol, and add new works to that part of the hill where the Gauls had endeavoured to scale the citadel. These works were esteemed very beautiful, as Livy informs us, even in the time of Augustus, after the city was embellished with most magnificent decorations.

And now Rome being reinstated in her former flourishing condition, the tribunes of the people, who had been for some time quiet, began to renew their seditious harangues, and revive the old quarrel about the division of the conquered lands. The patricians had appropriated to themselves the Pomptin territory lately taken from the Volsci, and the tribunes laid hold of this opportunity to raise new disturbances. But the citizens being so drained of their money that they had not enough left to cultivate new farms and stock them with cattle, the declamations of the tribunes made no impression upon their minds; so that the project vanished. As for the military tribunes, they owned that their election had been defective; and, lest the irregularities of the former comitia should be continued in the suc-

ceeding ones, they voluntarily laid down their office. So that, after a short interregnum, during which M. Manlius, Ser. Sulpitius, and L. Valerius Potitus, governed the republic, six new military tribunes L. Papius, C. Sergius, L. Æmilius, L. Menenius, L. Valerius, and C. Cornelius, were chosen for the ensuing year, which was spent in works of peace. A temple, which had been vowed to Mars during the war with the Gauls, was built, and consecrated by T. Quinctius, who presided over the affairs of religion. As there had hitherto been but few Roman tribes beyond the Tiber which had a right of suffrage in the comitia, four new ones were added, under the name of the *Stellatina*, *Tramontina*, *Sabatina*, and *Arniensis*; so that the tribes were now in all 25, which enjoyed the same rights and privileges.

The expectation of an approaching war induced the centuries to choose Camillus one of the military tribunes for the next year. His colleagues were Ser. Cornelius, Q. Servilius, L. Quinctius, L. Horatius, and P. Valerius. As all these were men of moderation, they agreed to invest Camillus with the sole management of affairs in time of war; and accordingly in full senate transferred all their power into his hands; so that he became in effect dictator. It had been already determined in the senate to turn the arms of the republic against the Hetrurians; but, upon advice that the Antiates had entered the Pomptin territory, and obliged the Romans who had taken possession of it to retire, it was thought necessary to humble them before the republic engaged in any other enterprise. The Antiates had joined the Latins and Hernici near Satricum; so that the Romans, being terrified at their prodigious numbers, shewed themselves very backward to engage: which Camillus perceiving, he instantly mounted his horse, and riding through all the ranks of the army, encouraged them by a proper speech; after which he dismounted, took the next standard-bearer by the hand, led him towards the enemy, and cried out, *Soldiers, advance*. The soldiery were ashamed not to follow a general who exposed himself to the first attack; and therefore, having made a great shout, they fell upon the enemy with incredible fury. Camillus, in order to increase their eagerness still more, commanded a standard to be thrown into the middle of the enemy's battalions; which made the soldiers, who were fighting in the first ranks, exert all the resolution they could to recover it. The Antiates, not being able any longer to make head against the Romans, gave way, and were entirely defeated. The Latins and Hernici separated from the Volsci, and returned home. The Volsci, seeing themselves thus abandoned by their allies, took refuge in the neighbouring city of Satricum; which Camillus immediately invested, and took by assault. The Volsci threw down their arms, and surrendered at discretion. He then left his army under the command of Valerius; and returned to Rome to solicit the consent of the senate, and to make the necessary preparations for undertaking the siege of Antium.

But, while he was proposing this affair to the senate, deputies arrived from Nepes and Sutrium, two cities in alliance with Rome in the neighbourhood of Hetruria, demanding succours against the Hetrurians, who threatened to besiege these two cities, which were the keys of Hetruria. Hereupon the expedition against Antium

Rome.

147
Unbounded
power con-
ferred on
Camillus,

148
Who gives
the Anti-
ates, &c. a
great de-
feat.

149
His other
successes,

Rome. Antium was laid aside, and Camillus commanded to hasten to the relief of the allied cities, with the troops which Servilius had kept in readiness at Rome in case of an emergency. Camillus immediately set out for the new war; and, upon his arrival before Sutrium, found that important place not only besieged, but almost taken, the Hetrurians having made themselves masters of some of the gates, and gained possession of all the avenues leading to the city. However, the inhabitants no sooner heard that Camillus was come to their relief, but they recovered their courage, and, by barricadoes made in the streets, prevented the enemy from making themselves masters of the whole city. Camillus in the mean time having divided his army into two bodies, ordered Valerius to march round the walls, as if he designed to scale them, while he with the other undertook to charge the Hetrurians in the rear, force his way into the city, and shut up the enemy between the besieged and his troops. The Romans no sooner appeared but the Hetrurians betook themselves to a disorderly flight through a gate which was not invested, Camillus's troops made a dreadful slaughter of them within the city, while Valerius put great numbers of them to the sword without the walls. From reconquering Sutrium, Camillus hastened to the relief of Nepes. But that city being better affected to the Hetrurians than to the Romans, had voluntarily submitted to the former. Wherefore Camillus, having invested it with his whole army, took it by assault, put all the Hetrurian soldiers without distinction to the sword, and condemned the authors of the revolt to die by the axes of the lictors. Thus ended Camillus's military tribuneship, in which he acquired no less reputation than he had done in the most glorious of his dictatorships.

150
Ambition
of M. Man-
lius,

In the following magistracy of six military tribunes, a dangerous sedition is said to have taken place through the ambition of Marcus Manlius, who had saved the capitol from the Gauls in the manner already related. Though this man had pride enough to despise all the other great men in Rome, yet he envied Camillus, and took every opportunity of magnifying his own exploits beyond those of the dictator. But not finding such a favourable reception from the nobility as he desired, he concerted measures with the tribunes of the people, and strove to gain the affections of the multitude. Not content with renewing the proposal for the distribution of conquered lands, he also made himself an advocate for insolvent debtors, of whom there was now a great number, as most of the lower class had been obliged to borrow money in order to rebuild their houses. The senate, alarmed at this opposition, created A. Cornelius Cossus dictator, for which the war with the Volsci afforded them a fair pretence. Manlius, however, still continued to inflame the people against the patricians. Besides the most unbounded personal generosity, he held assemblies at his own house (in the citadel), where he confidently gave out that the senators, not content with

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being the possessors of those lands which ought to have been equally divided among all the citizens, had concealed, with an intent to appropriate it to their own use, all the gold which was to have been paid to the Gauls, and which would alone be sufficient to discharge the debts of all the poor plebeians; and he moreover promised to show in due time where this treasure was concealed. For this assertion he was brought before the dictator; who commanded him to discover where the pretended treasure was, or to confess openly before the whole assembly that he had slandered the senate.—Manlius replied, that the dictator himself, and the principal persons in the senate, could only give the proper intelligence of this treasure, as they had been the most active in securing it. Upon this he was committed to prison; but the people made such disturbance, that the senate were soon after fain to release him. By this he was emboldened to continue his former practices; till at last the senate gave an order to the military tribunes to take care that the commonwealth suffered no detriment from the pernicious projects of Marcus Manlius, and even gave them authority to assassinate him, if they found it necessary so to do. At last, however, he was publicly accused of aspiring to be king; however, the people, it is said, were so struck with gratitude, on account of his having delivered the capitol from the Gauls, that they could not resolve to condemn him. But the military tribunes, who, it seems, were bent on his destruction, having appointed the assembly to be held without the city, there obtained their wish. Manlius was thrown headlong from the capitol itself: it was thenceforth decreed that no patrician should dwell in the capitol or citadel; and the Manlian family resolved that no member of it should ever afterwards bear the prænomen of *Marcus*. No sooner was Manlius dead, however, than the people lamented his fate; and because a plague broke out soon after, they imputed it to the anger of the gods on account of the destruction of the hero who had saved the state (A).

151
Who is
condemned
and execu-
ted.

The Romans, having now triumphed over the Sabines, the Etrurians, the Latins, the Hernici, the Æqui, and the Volscians, began to look for greater conquests. They accordingly turned their arms against the Samnites, a people about 100 miles east from the city, descended from the Sabines, and inhabiting a large tract of southern Italy, which at this day makes a considerable part of the kingdom of Naples. Valerius Corvus and Cornelius were the two consuls, to whose care it first fell to manage this dreadful contention between the rival states.

Valerius was one of the greatest commanders of his time; he was surnamed Corvus, from a strange circumstance of being assisted by a crow in a single combat, in which he fought and killed a Gaul of a gigantic stature. To his colleague's care it was assigned to lead an army to Samnium, the enemy's capital; while Corvus was sent to relieve Capua, the capital of the

152
War with
the Sam-
nites.

Z z

Cam-

(A) The above accounts are exactly conformable to what is to be found in the best Latin historians; nevertheless they are far from being reckoned universally authentic. Mr Hooke, in his annotations on the death of M. Manlius, has given very strong reasons against believing either that Camillus rescued the gold from the Gauls, or that Manlius was condemned. See *Hooke's Roman History*, Vol. II. p. 326, *et seq.*

Rome.

Campanians. The Samnites were the bravest men the Romans had ever yet encountered, and the contention between the two nations was managed on both sides with the most determined resolution. But the fortune of Rome prevailed; the Samnites at length fled, averring, that they were not able to withstand the fierce looks and the fire-darting eyes of the Romans. The other consul, however, was not at first so fortunate; for having unwarily led his army into a defile, he was in danger of being cut off, had not Decius, a tribune of the army, possessed himself of an hill which commanded the enemy: so that the Samnites, being attacked on either side, were defeated with great slaughter, no less than 30,000 of them being left dead upon the field of battle.

Some time after this victory, the soldiers who were stationed at Capua mutinying, forced Quintius, an old and eminent soldier, who was then residing in the country, to be their leader; and, conducted by their rage more than their general, came within eight miles of the city. So terrible an enemy, almost at the gates, not a little alarmed the senate; who immediately created Valerius Corvus dictator, and sent him forth with another army to oppose them. The two armies were now drawn up against each other, while fathers and sons beheld themselves prepared to engage in opposite causes; but Corvus, knowing his influence among the soldiery, instead of going forward to meet the mutineers in an hostile manner, went with the most cordial friendship to embrace and expostulate with his old acquaintances. His conduct had the desired effect. Quintius, as their speaker, only desired to have their defection from their duty forgiven; and as for himself, as he was innocent of their conspiracy, he had no reason to solicit pardon for his offences.

A war between the Romans and the Latins followed soon after; but as their habits, arms, and language, were the same, the most exact discipline was necessary to prevent confusion in the engagement. Orders, therefore, were issued by Manlius the consul, that no soldier should leave his ranks upon whatever provocation; and that he should be certainly put to death who should offer to do otherwise. With these injunctions, both armies were drawn out in array, and ready to begin; when Metius, the general of the enemy's cavalry, pushed forward from his lines, and challenged any knight in the Roman army to single combat. For some time there was a general pause, no soldier offering to disobey his orders, till Titus Manlius, the consul's own son, burning with shame to see the whole body of the Romans intimidated, boldly sallied out against his adversary. The soldiers on both sides for a while suspended the general engagement to be spectators of this fierce encounter. Manlius killed his adversary; and then despoiling him of his armour, returned in triumph to his father's tent, where he was preparing and giving orders relative to the engagement. Howsoever he might have been applauded by his fellow-soldiers, being as yet doubtful of the reception he should find from his father, he came, with hesitation, to lay the enemy's spoils at his feet, and with a modest air insinuated, that what he did was entirely from a spirit of hereditary virtue. But he was soon dreadfully made sensible of his error, when his father, turning away, ordered him to be led publicly forth before the army, and there to

have his head struck off on account of his disobeying orders. The whole army was struck with horror at this unnatural mandate: fear for a while kept them in suspense; but when they saw their young champion's head struck off, and his blood streaming upon the ground, they could no longer contain their execrations and their groans. His dead body was carried forth without the camp, and being adorned with the spoils of the vanquished enemy, was buried with all the pomp of military distress.

In the mean time, the battle joined with mutual ¹⁵³ A bloody battle with the Latins, fury; and as the two armies had often fought under the same leaders, they combated with all the animosity of a civil war. The Latins chiefly depended on their bodily strength; the Romans, on their invincible courage and conduct. Forces so nearly matched seemed only to require the protection of their deities to turn the scale of victory; and, in fact, the augurs had foretold, that whatever part of the Roman army should be distressed, the commander of that part should devote himself for his country, and die as a sacrifice to the immortal gods. Manlius commanded the right wing, and Decius led on the left. Both sides fought for some time with doubtful success, as their courage was equal; but, after a time, the left wing of the Roman army began to give ground. It was then that Decius, who commanded there, resolved to devote himself for his country, and to offer his own life as an atonement to save his army. Thus determined, he called out to Manlius with a loud voice, and demanded his instructions, as he was the chief pontiff, how to devote himself, and the form of the words he should use. By his directions, therefore, being clothed in a long robe, his head covered, and his arms stretched forward, standing upon a javelin, he devoted himself to the celestial and infernal gods for the safety of Rome. Then arming himself, and mounting on horseback, he drove furiously into the midst of the enemy, carrying terror and consternation wherever he came, till he fell covered with wounds. In the mean time, the Roman army considered his devoting himself in this manner as an assurance of success; nor was the superstition of the Latins less powerfully influenced by his resolution; a total rout began to ensue: the Romans pressed them on every side; and so great was the carnage, that scarce a fourth ¹⁵⁴ Who are totally defeated and subdued. part of the enemy survived the defeat. This was the last battle of any consequence that the Latins had with the Romans: they were forced to beg a peace upon hard conditions; and two years after, their strongest city, Pædum, being taken, they were brought under an entire submission to the Roman power.

A signal disgrace which the Romans sustained about this time in their contest with the Samnites, made a pause in their usual good fortune, and turned the scale for a while in the enemy's favour. The senate having denied the Samnites peace, Pontius their general was resolved to gain by stratagem what he had frequently lost by force. Accordingly, leading his army into a defile called *Claudium*, and taking possession of all its outlets, he sent 10 of his soldiers, habited like shepherds, with directions to throw themselves in the way the Romans were to march. The Roman consul met them, and taking them for what they appeared, demanded the route the Samnite army had taken; they, with seeming indifference, replied, that they were gone to Luceria, a town

Rome. town in Apulia, and were then actually besieging it. The Roman general, not suspecting the stratagem that was laid against him, marched directly by the shortest road, which lay through the defiles, to relieve the city; and was not undeceived till he saw his army surrounded, and blocked up on every side. Pontius thus having the Romans entirely in his power, first obliged the army to pass under the yoke, having been previously stripped of all but their garments; he then stipulated that they should wholly quit the territories of the Samnites, and that they should continue to live upon terms of former confederacy. The Romans were constrained to submit to this ignominious treaty, and marched into Capua disarmed and half naked. When the army arrived at Rome, the whole city was most surprisingly afflicted at their shameful return; nothing but grief and resentment was to be seen, and the whole city was put into mourning.

But this was a transitory calamity: the war was carried on as usual for many years; the power of the Samnites declining every day, while that of the Romans continually increased. Under the conduct of Papirius Cursor, who was at different times consul and dictator, repeated triumphs were gained. Fabius Maximus also had his share in the glory of conquering them; and Decius, the son of that Decius whom we saw devoting himself for his country about 40 years before, followed the example of his father, and rushed into the midst of the enemy, imagining that he could save the lives of his countrymen with the loss of his own.

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Pyrrhus
king of
Epirus in-
vited into
Italy by
the Taren-
tines.

The success of the Romans against the Samnites alarmed all Italy. The Tarentines in particular, who had long plotted underhand against the republic, now openly declared themselves; and invited into Italy Pyrrhus king of Epirus, in hopes of being able by his means to subdue the Romans. The offer was readily accepted by that ambitious monarch, who had nothing less in view than the conquest of all Italy.— Their ambassadors carried magnificent presents for the king, with instructions to acquaint him, that they only wanted a general of fame and experience; and that, as for troops, they could themselves furnish a numerous army of 20,000 horse and 350,000 foot, made up of Lucanians, Messapians, Samnites, and Tarentines. As soon as the news of this deputation were brought to the Roman camp, Æmilius, who had hitherto made war on the Tarentines but gently, in hopes of adjusting matters by way of negotiation, took other measures, and began to commit all sorts of hostilities. He took cities, stormed castles, and laid the whole country waste, burning and destroying all before him. The Tarentines brought their army into the field; but Æmilius soon obliged them to take refuge within their walls. However, to induce them to lay aside the design of receiving Pyrrhus, he used the prisoners he had taken with great moderation, and even sent them back without ransom. These highly extolled the generosity of the consul, insomuch that many of the inhabitants were brought over to the Roman party, and they all began to repent of their having rejected a peace and sent for Pyrrhus.

But, in the mean time, the Tarentine ambassadors arriving in Epirus, pursuant to the powers they had received, made an absolute treaty with the king; who

immediately sent before him the famous Cyneas, with 3000 men, to take possession of the citadel of Tarentum. This eloquent minister soon found means to depose Agis, whom the Tarentines had chosen to be their general and the governor of the city, though a sincere friend to the Romans. He likewise prevailed upon the Tarentines to deliver up the citadel into his hands; which he no sooner got possession of, than he dispatched messengers to Pyrrhus, soliciting him to hasten his departure for Italy. In the mean time, the consul Æmilius, finding that he could not attempt any thing with success against the Tarentines this campaign, resolved to put his troops into winter-quarters in Apulia, which was not far from the territory of Tarentum, that was soon to become the seat of the war. As he was obliged to pass through certain defiles, with the sea on one side and high hills on the other, he was there attacked by the Tarentines and Epirots from great numbers of barks fraught with balistæ (that is, engines for throwing stones of a vast weight), and from the hills, on which were posted a great many archers and slingers. Hereupon Æmilius placed the Tarentine prisoners between him and the enemy; which the Tarentines perceiving, soon left off molesting the Romans, out of compassion to their own countrymen; so that the Romans arrived safe in Apulia, and there took up their winter-quarters.

The next year Æmilius was continued in the command of his own troops, with the title of *proconsul*; and was ordered to make war upon the Salentines, who had declared for the Tarentines. The present exigence of affairs obliged the Romans to enlist the *proletarii*, who were the meanest of the people, and therefore by way of contempt called *proletarii*, as being thought incapable of doing the state any other service than that of peopling the city, and stocking the republic with subjects. Hitherto they had never been suffered to bear arms; but were now, to their great satisfaction, enrolled as well as others. In the mean time Pyrrhus arrived at Tarentum, having narrowly escaped shipwreck; and being conducted into the city by his faithful Cyneas, was received there with loud acclamations.

The Tarentines, who were entirely devoted to their pleasures, expected that he should take all the fatigues of the war on himself, and expose only his Epirots to danger. And indeed Pyrrhus for some days dissembled his design, and suffered the Tarentines to indulge without restraint in their usual diversions. But his ships, which had been dispersed all over the Ionian sea, arriving one after another, and with them the troops which he had put on board at Epirus, he began to reform the disorders that prevailed in the city. The theatre was the place to which the idle Tarentines resorted daily in great numbers, and where the incendiaries stirred up the people to sedition with their harangues: he therefore caused it to be shut up, as he did likewise the public gardens, porticoes, and places of exercise, where the inhabitants used to entertain themselves with news, and speak with great freedom of their governors, censuring their conduct, and settling the government according to their different humours, which occasioned great divisions, and rent the city into various factions. As they were a very voluptuous and indolent people, they spent whole days and nights in feasts, masquerades, plays, &c. These therefore Pyrrhus ab-

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Pyrrhus
obliges the
Tarentines
to learn the
art of war.

Rome.

solutely prohibited, as no less dangerous than the assemblies of prating politicians. They were utter strangers to military exercises, and the art of handling arms; but Pyrrhus having caused an exact register to be made of all the young men who were fit for war, picked out the strongest amongst them, and incorporated them among his own troops, saying, that he would take it upon himself to give them courage. He exercised them daily for several hours; and on that occasion behaved with an inexorable severity, inflicting exemplary punishment on such as did not attend or failed in their duty. By these wise measures he prevented seditions among the citizens, and inured their youth to military discipline; and because many, who had not been accustomed to such severity and rigour, withdrew from their native country, Pyrrhus, by a public proclamation, declared all those capitally guilty who should attempt to abandon their country, or absent themselves from the common musters.

The Tarentines, being now sensible that Pyrrhus was determined to be their master, began loudly to complain of his conduct; but he, being informed of whatever passed among them by his spies, who insinuated themselves into all companies, privately dispatched the most factious, and sent those whom he suspected, under various pretences, to his son's court in Epirus.

In the mean time, P. Valerius Lævinus, the Roman consul, entering the country of the Lucanians, who were in alliance with the Tarentines, committed great ravages there; and having taken and fortified one of their castles, waited in that neighbourhood for Pyrrhus. The king, though he had not yet received any succours from the Samnites, Messapians, and other allies of the Tarentines, thought it highly dishonourable to continue shut up in a city, while the Romans were ravaging the country of his friends. He therefore took the field with the troops he had brought with him from Epirus, some recruits of Tarentum, and a small number of Italians. But before he began hostilities, he wrote a letter to Lævinus, commanding him to disband his army; and on his refusal, immediately marched towards those parts where Lævinus was waiting for him. The Romans were encamped on the hither side of the river Siris; and Pyrrhus appearing on the opposite bank, made it his first business to reconnoitre the enemy's camp in person, and see what appearance they made. With this view he crossed the river, attended by Megacles, one of his officers and chief favourites; and having observed the consul's intrenchments, the manner in which he had posted his advanced guards, and the good order of his camp, he was greatly surprised; and addressing Megacles, "These people (said he) are not such barbarians as we take them to be: let us try them before we condemn them." On his return, he changed his resolution of attacking them; and, shutting himself up in his intrenchments, waited for the arrival of the confederate troops. In the mean time, he posted strong guards along the river, to prevent the enemy from passing it, and continually sent out scouts to discover the designs, and watch the motions of the consul. Some of these being taken by the advanced guards of the Romans, the consul himself led them through his camp, and having shewed them his army, sent them back to the king, telling them, that he had many other troops to show them in due time.

Rome.

Lævinus being determined to draw the enemy to a battle before Pyrrhus received the reinforcements he expected, having harangued his troops, marched to the banks of the Siris; and there drawing up his infantry in battalia, ordered the cavalry to file off, and march a great way about, in order to find a passage at some place not defended by the enemy. Accordingly, they passed the river without being observed; and falling upon the guards which Pyrrhus had posted on the banks over-against the consular army, gave the infantry an opportunity of crossing the river on bridges which Lævinus had prepared for that purpose. But before they got over, Pyrrhus, hastening from his camp, which was at some distance from the river, hoped to cut the Roman army in pieces while they were disordered with the difficulties of passing the river, and climbing up the steep banks; but the cavalry covering the infantry, and standing between them and the Epirots, gave them time to form themselves on the banks of the river. On the other hand, Pyrrhus drew up his men as fast as they came from the camp, and performed such deeds of valour, that the Romans thought him worthy of the great reputation he had acquired.

As the cavalry alone had hitherto engaged, Pyrrhus, who confided most in his infantry, hastened back to the camp, in order to bring them to the charge; but took two precautions before he began the attack: the first was, to ride through the ranks, and show himself to the whole army; for his horse having been killed under him in the first onset, a report had been spread that he was slain: the second was, to change his habit and helmet with Megacles; for having been known in the engagement of the horse by the richness of his attire and armour, many of the Romans had aimed at him in particular, so that he was with the utmost difficulty taken and saved, after his horse had been killed under him. Thus disguised, he led his phalanx against the Roman legions, and attacked them with incredible fury. Lævinus sustained the shock with great resolution, so that the victory was for many hours warmly disputed. The Romans gave several times way to the Epirots, and the Epirots to the Romans; but both parties rallied again, and were brought back to the charge by their commanders. Megacles, in the attire and helmet of Pyrrhus, was in all places, and well supported the character he had assumed. But his disguise at last proved fatal to him: for a Roman knight, by name *Dexter*, taking him for the king, followed him wherever he went; and having found an opportunity of discharging a blow at him, struck him dead on the spot, stripped him of his helmet and armour, and carried them in triumph to the consul, who, by showing to the Epirots the spoils of their king, so terrified them, that they began to give ground. But Pyrrhus, appearing bare-headed in the first files of his phalanx, and riding through all the lines, undeceived his men, and inspired them with new courage.

The advantage seemed to be pretty equal on both sides, when Lævinus ordered his cavalry to advance; which Pyrrhus observing, drew up 20 elephants in the front of his army, with towers on their backs full of bowmen. The very sight of those dreadful animals chilled the bravery of the Romans, who had never before seen any. However, they still advanced, till their horses, not being able to bear the smell of them, and frightened

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His first
battle with
the Ro-
mans.

Rome. frightened at the strange noise they made, either threw their riders, or carried them on full speed in spite of their utmost efforts. In the mean time, the archers, discharging showers of darts from the towers, wounded several of the Romans in that confusion, while others were trod to death by the elephants. Notwithstanding the disorder of the cavalry, the legionaries still kept their ranks, and could not be broken, till Pyrrhus attacked them in person at the head of the Thessalian horse. The onset was so furious, that they were forced to yield, and retire in disorder. The king of Epirus restrained the ardour of his troops, and would not suffer them to pursue the enemy: an elephant, which had been wounded by a Roman soldier named *Minucius*, having caused a great disorder in his army, this accident favoured the retreat of the Romans, and gave them time to repass the river, and take refuge in Apulia. The Epirot remained master of the field, and had the pleasure to see the Romans fly before him: but the victory cost him dear, a great number of his best officers and soldiers having been slain in the battle; whence he was heard to say after the action, that he was both conqueror and conquered, and that if he gained such another victory, he should be obliged to return to Epirus alone.

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The Romans defeated.

His first care after the action was to bury the dead, with which the plain was covered; and herein he made no distinction between the Romans and his own Epirots. In viewing the bodies of the former, he observed, that none of them had received dishonourable wounds; that they had all fallen in the posts assigned them, still held their swords in their hands, and showed, even after death, a certain martial air and fierceness in their faces; and on this occasion it was that he uttered those famous words: "O that Pyrrhus had the Romans for his soldiers, or the Romans Pyrrhus for their leader! together, we should subdue the whole world."

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Pyrrhus reduces several towns.

The king of Epirus understood the art of war too well not to reap what advantage he could from his victory. He broke into the countries in alliance with the Romans, plundered the lands of the republic, and made incursions even into the neighbourhood of Rome. Many cities opened their gates to him, and in a short time he made himself master of the greatest part of Campania. While he was in that fruitful province, subsisting his troops there at the expence of the Romans, he was joined by the Samnites, Lucanians, and Messapians, whom he had so long expected. After having reproached them for their delay, he gave them a good share of the spoils he had taken from the enemy; and having by this means gained their affections, he marched without loss of time to lay siege to Capua: but *Lævinus*, having already received a reinforcement of two legions, threw some troops into the city; which obliged Pyrrhus to drop his design, and, leaving Capua, to march straight to Naples. *Lævinus* followed him, harassing his troops on their march; and at length, by keeping his army in the neighbourhood, forced him to give over all thoughts of making himself master of that important city. The king then, all on a sudden, took his route towards Rome by the Latin way, surprised *Fregellæ*, and, marching through the country of the *Hernici*, sat down before *Præneste*. There, from the top of an hill, he had the pleasure of seeing Rome; and

is said to have advanced so near the walls, that he drove a cloud of dust into the city. But he was soon forced to retire by the other consul *T. Coruncanius*, who, having reduced *Hetruria*, was just then returned with his victorious army to Rome. The king of Epirus, therefore, having no hopes of bringing the *Hetrurians* into his interest, and seeing two consular armies ready to fall upon him, raised the siege of *Præneste*, and hastened back into Campania; where, to his great surprise, he found *Lævinus* with a more numerous army than that which he had defeated on the banks of the *Siris*. The consul went to meet him, with a design to try the fate of another battle; which Pyrrhus being unwilling to decline, drew up his army, and, to strike terror into the Roman legions, ordered his men to beat their bucklers with their lances, and the leaders of the elephants to force them to make a hideous noise. But the noise was returned with such an universal shout by the Romans, that Pyrrhus, thinking so much alacrity on the part of the vanquished too sure a prognostic of victory, altered his mind; and, pretending that the auguries were not favourable, retired to *Tarentum*, and put an end to the campaign.

Rome.

While Pyrrhus continued quiet at *Tarentum*, he had time to reflect on the valour and conduct of the Romans; which made him conclude, that the war in which he was engaged must end in his ruin and disgrace, if not terminated by an advantageous peace. He was therefore overjoyed when he heard that the senate had determined to send an honourable embassy to him, not doubting but their errand was to propose terms of peace. The ambassadors were three men of distinguished merit; to wit, *Cornelius Dolabella*, who was famous for the signal victory he had gained over the *Senones*, *Fabricius*, and *Æmilius Pappus*, who had been his colleague in the consulate two years before. When they were admitted to an audience, the only thing they demanded was a surrender of the prisoners, either by the way of exchange, or at such a ransom as should be agreed on; for Pyrrhus, in the late battle, had made 1800 prisoners, most of them Roman knights and men of distinction in the republic. They had fought with great bravery, till their horses, frightened with the roaring of the king's elephants, had either thrown them, or obliged them to dismount; by which unforeseen accident they had fallen into the enemy's hands. The senate, therefore, pitying the condition of those brave men, had determined, contrary to their custom, to redeem them. Pyrrhus was greatly surprised and disappointed when he found that they had no other proposals to make; but, concealing his thoughts, he only answered, that he would consider of it, and let them know his resolution. Accordingly, he assembled his council: but his chief favourites were divided in their opinions. *Milo*, who commanded in the citadel of *Tarentum*, was for coming to no composition with the Romans; but *Cyneas*, who knew his master's inclination, proposed not only sending back the prisoners without ransom, but dispatching an embassy to Rome to treat with the senate of a lasting peace. His advice was approved, and he himself appointed to go on that embassy. After these resolutions, the king acquainted the ambassadors, that he intended to release the prisoners without ransom, since he had already riches enough, and desired

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He inclines to peace.

Rome.

fired nothing of the republic but her friendship. Afterwards he had several conferences with Fabricius, whose virtue he had tried with mighty offers of riches and grandeur; but finding him proof against all temptations, he resolved to try whether his intrepidity and courage were equal to his virtue. With this view, he caused an elephant to be placed behind a curtain in the hall where he received the Roman ambassador. As Fabricius had never seen one of those beasts, the king, taking a turn or two in the hall with him, brought him within the elephant's reach, and then caused the curtain to be drawn all on a sudden, and that monstrous animal to make his usual noise, and even lay his trunk on Fabricius's head. But the intrepid Roman, without betraying the least fear or concern, "Does the great king (said he, with surprising calmness), who could not stagger me with his offers, think to frighten me with the braying of a beast?" Pyrrhus, astonished at his immoveable constancy, invited him to dine with him; and on this occasion it was, that the conversation turning upon Epicurean philosophy, Fabricius made that celebrated exclamation, "O that Pyrrhus, both for Rome's sake and his own, had placed his happiness in the boasted indolence of Epicurus."

Every thing Pyrrhus heard or saw of the Romans increased his earnestness for peace. He sent for the three ambassadors, released 200 of the prisoners without ransom, and suffered the rest, on their parole, to return to Rome to celebrate the Saturnalia, or feasts of Saturn, in their own families. Having by this obliging behaviour gained the good-will of the Roman ambassadors, he sent Cyneas to Rome, almost at the same time that they left Tarentum. The instructions he gave this faithful minister, were, to bring the Romans to grant these three articles: 1. That the Tarentines should be included in the treaty made with the king of Epirus. 2. That the Greek cities in Italy should be suffered to enjoy their laws and liberties. 3. That the republic should restore to the Samnites, Lucanians, and Bruttians, all the places she had taken from them. Upon these conditions, Pyrrhus declared himself ready to forbear all further hostilities, and conclude a lasting peace. With these instructions Cyneas set out for Rome; where, partly by his eloquence, partly by rich presents to the senators and their wives, he soon gained a good number of voices. When he was admitted into the senate, he made an harangue worthy of a disciple of the great Demosthenes; after which, he read the conditions Pyrrhus proposed, and, with a great deal of eloquence, endeavouring to show the reasonableness and moderation of his master's demands, asked leave for Pyrrhus to come to Rome to conclude and sign the treaty. The senators were generally inclined to agree to Pyrrhus's terms; but nevertheless, as several senators were absent, the determination of the affair was postponed to the next day; when Appius Claudius, the greatest orator and most learned civilian in Rome, old and blind as he was, caused himself to be carried to the senate, where he had not appeared for many years; and there, partly by his eloquence, partly by his authority, so prepossessed the minds of the senators against the king of Epirus, and the conditions he offered, that, when he had done speaking, the conscript fathers unanimously passed a decree, the substance of which was, That the war with Pyrrhus

should be continued; that his ambassador should be sent back that very day; that the king of Epirus should not be permitted to come to Rome; and that they should acquaint his ambassador, that Rome would enter into no treaty of peace with his master till he had left Italy.

Cyneas, surprised at the answer given him, left Rome the same day, and returned to Tarentum, to acquaint the king with the final resolution of the senate. Pyrrhus would have willingly concluded a peace with them upon honourable terms; but, as the conditions they offered were not by any means consistent with the reputation of his arms, he began, without loss of time, to make all due preparations for the next campaign. On the other hand, the Romans having raised to the consulate P. Sulpicius Saverrio, and P. Decius Mus, dispatched them both into Apulia, where they found Pyrrhus encamped near a little town called *Asculum*. There the consuls, joining their armies, fortified themselves at the foot of the Apennines, having between them and the enemy a large deep stream which divided the plain. Both armies continued a great while on the opposite banks, before either ventured to pass over to attack the other. The Epirots allowed the Romans to cross the stream, and draw up on the plain. On the other hand, Pyrrhus placed his men likewise in order of battle in the same plain; and all the ancients do him the justice to say, that no commander ever understood better the art of drawing up an army and directing its motions. In the right wing he placed his Epirots and the Samnites; in his left the Lucanians, Bruttians and Salentines; and his phalanx in the centre. The centre of the Roman army consisted of four legions, which were to engage the enemy's phalanx; on their wings were posted the light-armed auxiliaries and the Roman horse. The consuls, in order to guard their troops against the fury of the elephants had prepared chariots, armed with long points of iron in the shape of forks, and filled with soldiers carrying firebrands, which they were directed to throw at the elephants, and by that means frighten them, and set their wooden towers on fire. These chariots were posted over-against the king's elephants, and ordered not to stir till they entered upon action. To this precaution the Roman generals added another, which was, to direct a body of Apulians to attack Pyrrhus's camp in the heat of the engagement, in order to force it, or at least to draw off part of the enemy's troops to defend it. At length the attack began, both parties being pretty equal in number; for each of them consisted of about 40,000 men. The phalanx sustained, for a long time, the furious onset of the legions with incredible bravery: but at length being forced to give way, Pyrrhus commanded his elephants to advance, but not on the side where the Romans had posted their chariots; they marched round, and, falling upon the Roman horse, soon put them into confusion. Then the phalanx, returning with fresh courage to the charge, made the Roman legions in their turn give ground. On this occasion Decius was killed, so that one consul only was left to command the two Roman armies. But while all things seemed to favour Pyrrhus, the body of Apulians which we have mentioned above, falling unexpectedly on the camp of the Epirots, obliged the king to dispatch a strong detachment to defend his intrenchments.

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Another
battle.161
The Ro-
mans re-
fused
to treat.

Rome.

Upon the departure of these troops, some of the Epirots, imagining that the camp was taken, began to lose courage, and retire; those who were next to them followed their example, and in a short time the whole army gave way. Pyrrhus having attempted several times in vain to rally his forces, returned to the charge with a small number of his friends and the most courageous of his officers. With these he sustained the fury of the victorious legions, and covered the retreat of his own men. But being, after a most gallant behaviour, dangerously wounded, he retired at last with his small band in good order, leaving the Romans masters of the field. As the sun was near setting, the Romans, being extremely fatigued, and a great number of them wounded, the consul Sulpicius, not thinking it advisable to pursue the enemy, founded a retreat, repassed the stream, and brought his troops back to the camp. Sulpicius appeared in the field of battle the next day, with a design to bring the Epirots to a second engagement; but finding they had withdrawn in the night to Tarentum, he likewise retired, and put his troops into winter-quarters in Apulia.

Both armies continued quiet in their quarters during winter; but early in the spring took the field anew.—The Romans were commanded this year by two men of great fame, whom they had raised to the consulate the second time: these were the celebrated C. Fabricius and Q. Æmilius Pappus; who no sooner arrived in Apulia, than they led their troops into the territory of Tarentum. Pyrrhus, who had received considerable reinforcements from Epirus, met them near the frontiers, and encamped at a small distance from the Roman army. While the consuls were waiting here for a favourable opportunity to give battle, a messenger from Nicias, the king's physician, delivered a letter to Fabricius; wherein the traitor offered to take off his master by poison, provided the consul would promise him a reward proportionable to the greatness of the service. The virtuous Roman, being filled with horror at the bare proposal of such a crime, immediately communicated the affair to his colleague; who readily joined with him in writing a letter to Pyrrhus, wherein they warned him, without discovering the criminal, to take care of himself, and be upon his guard against the treacherous designs of those about him. Pyrrhus, out of a deep sense of gratitude for so great a benefit, released immediately, without ransom, all the prisoners he had taken. But the Romans, disdaining to accept either a favour from an enemy, or a recompense for not committing the blackest treachery, declared, that they would not receive their prisoners but by way of exchange; and accordingly sent to Pyrrhus an equal number of Samnite and Tarentine prisoners.

As the king of Epirus grew every day more weary of a war which he feared would end in his disgrace, he sent Cyneas a second time to Rome, to try whether he could, with his artful harangues, prevail upon the conscript fathers to hearken to an accommodation, upon such terms as were consistent with his honour. But the ambassador found the senators steady in their former resolution, and determined not to enter into a treaty with his master till he had left Italy, and withdrawn from thence all his forces. This gave the king great uneasiness; for he had already lost most of his veteran troops and best officers, and was sensible that he should

lose the rest if he ventured another engagement. While he was revolving these melancholy thoughts in his mind, ambassadors arrived at his camp from the Syracusians, Agrigentines, and Leontines, imploring the assistance of his arms to drive out the Carthaginians, and put an end to the troubles which threatened their respective states with utter destruction. Pyrrhus, who wanted only some honourable pretence to leave Italy, laid hold of this; and appointing Milo governor of Tarentum, with a strong garrison to keep the inhabitants in awe during his absence, he set sail for Sicily with 30,000 foot and 2500 horse, on board a fleet of 200 ships. Here he was at first attended with great success; but the Sicilians, disgusted at the resolution he had taken of passing over into Africa, and much more at the enormous exactions and extortions of his ministers and courtiers, had submitted partly to the Carthaginians and partly to the Mamertines. When Carthage heard of this change, new troops were raised all over Africa, and a numerous army sent into Sicily to recover the cities which Pyrrhus had taken. As the Sicilians daily deserted from him in crowds, he was no way in a condition, with his Epirots alone, to withstand so powerful an enemy; and therefore, when deputies came to him from the Tarentines, Samnites, Bruttians, and Lucanians, representing to him the losses they had sustained since his departure, and remonstrating, that, without his assistance, they must fall a sacrifice to the Romans, he laid hold of that opportunity to abandon the island, and return to Italy. His fleet was attacked by that of Carthage; and his army, after their landing, by the Mamertines. But Pyrrhus having, by his heroic bravery, escaped all danger, marched along the sea-shore, in order to reach Tarentum that way. As he passed through the country of the Locrians, who had not long before massacred the troops he had left there, he not only exercised all sorts of cruelty on the inhabitants, but plundered the temple of Proserpine to supply the wants of his army. The immense riches which he found there, were, by his order, sent to Tarentum by sea; but the ships that carried them being dashed against the rocks by a tempest, and the mariners all lost, this proud prince was convinced, says Livy, that the gods were not imaginary beings, and caused all the treasure, which the sea had thrown upon the shore, to be carefully gathered up, and replaced in the temple: nay, to appease the wrath of the angry goddesses, he put all those to death who had advised him to plunder her temple. However, superstition made the ancients ascribe to this act of impiety all the misfortunes which afterwards befel that unhappy prince.

Pyrrhus at length arrived at Tarentum; but of the army he had carried into Sicily, he brought back into Italy only 2000 horse and not quite 20,000 foot. He therefore reinforced them with the best troops he could raise in the countries of the Samnites, Lucanians, and Bruttians; and hearing that the two new consuls, Curius Dentatus and Cornelius Lentulus, had divided their forces, the one invading Lucania and the other Samnium, he likewise divided his army into two bodies, marching with the choice of his Epirots against Dentatus, in hopes of surprising him in his camp near Beneventum. But the consul having notice of his approach, went out of his intrenchments with a strong detachment of legionaries to meet him; repulsed his

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Pyrrhus
defeated,
and dan-
gerously
wounded.

164
The king's
physician
offers to
poison him,
but is dis-
covered by
the Ro-
mans.

Rome.

165

Pyrrhus
goes into
Sicily.

166

He returns
into Italy.

van-

Rome. van-guard, put many of the Epirots to the sword, and took some of their elephants. Curius encouraged with this success, marched his army into the Taurasian fields, and drew it up in a plain which was wide enough for his troops, but too narrow for the Epirot phalanx, the phalangites being so crowded that they could not handle their arms without difficulty. But the king's eagerness to try his strength and skill with so renowned a commander, made him engage at that great disadvantage. Upon the first signal the action began; and one of the king's wings giving way, the victory seemed to incline to the Romans. But that wing where the king fought in person repulsed the enemy, and drove them back quite to their intrenchments. This advantage was in great part owing to the elephants; which Curius perceiving, commanded a corps de reserve, which he had posted near the camp, to advance and fall upon the elephants. These carrying burning torches in one hand, and their swords in the other, threw the former at the elephants, and with the latter defended themselves against their guides; by which means they were both forced to give way. The elephants being put to flight broke into the phalanx, close as it was, and there caused a general disorder; which was increased by a remarkable accident: for it is said, that a young elephant being wounded, and thereupon making a dreadful noise, the mother quitting her rank, and hastening to the assistance of her young one, put those who still kept their ranks into the utmost confusion. But, however that be, it is certain that the Romans obtained at last a complete victory. Orosius and Eutropius tell us that Pyrrhus's army consisted of 80,000 foot and 6000 horse, including his Epirots and allies; whereas the consular army was scarce 20,000 strong. Those who exaggerate the king's loss say, that the number of the slain on his side amounted to 30,000 men; but others reduce it to 20,000. All writers agree, that Curius took 1200 prisoners and eight elephants. This victory, which was the most decisive Rome had ever gained, brought all Italy under subjection, and paved the way for those vast conquests which afterwards made the Romans masters of the whole known world.

168
He abandoned his allies,

Pyrrhus being no way in a condition, after the great loss he had sustained, to keep the field, retired to Tarentum, attended only by a small body of horse, leaving the Romans in full possession of his camp; which they so much admired, that they made it ever after a model to form theirs by. And now the king of Epirus resolved to leave Italy as soon as possible; but concealed his design, and endeavoured to keep up the drooping spirits of his allies, by giving them hopes of speedy succours from Greece. Accordingly he dispatched ambassadors into Ætolia, Illyricum, and Macedon, demanding supplies of men and money. But the answers from those courts not proving favourable, he forged such as might please those whom he was willing to deceive; and by this means supported the courage of his friends, and kept his enemy in play. When he could conceal his departure no longer, he pretended to be on a sudden in a great passion at the dilatoriness of his friends in sending him succours; and acquainted the Tarentines, that he must go and bring them over himself. However, he left behind him a strong garrison in the citadel of Tarentum, under the command of the same Milo who had kept it for him during his stay

in Sicily. In order to keep this governor in his duty, he is said to have made him a very strange present, viz. a chair covered with the skin of Nicias, the treacherous physician, who had offered Fabricius to poison his master. After all these disguises and precautions, Pyrrhus at last set sail for Epirus, and arrived safe at Acroceraunium with 8000 foot and 500 horse; after having spent to no purpose six years in Italy and Sicily.

Though, from the manner in which Pyrrhus took his leave, his Italian allies had little reason to expect any further assistance from him, yet they continued to amuse themselves with vain hopes, till certain accounts arrived of his being killed at the siege of Argos, as has been related under the article EPIRUS. This threw the Samnites into despair: so that they put all to the issue of a general battle; in which they were defeated with such dreadful slaughter, that the nation is said to have been almost exterminated. This overthrow was soon followed by the submission of the Lucanians, Brutians, Tarentines, Sarcinates, Picentes, and Salentines; so that Rome now became mistress of all the nations from the remotest parts of Hetruria to the Ionian sea, and from the Tyrrhenian sea to the Adriatic. All these nations, however, did not enjoy the same privileges. Some were entirely subject to the republic, and had no laws but what they received from thence; others retained their old laws and customs, but in subjection to the republic: some were tributary; and others allies, who were obliged to furnish troops at their own expence when the Romans required. Some had the privilege of Roman citizenship, their soldiers being incorporated in the legions; while others had a right of suffrage in the elections made by the centuries. These different degrees of honour, privileges, and liberty, were founded on the different terms granted to the conquered nations when they surrendered, and were afterwards increased according to their fidelity and the services they did the republic.

The Romans now became respected by foreign nations, and received ambassadors from Ptolemy Philadelphus king of Egypt, and from Apollonia a city of Macedon. Sensible of their own importance, they now granted protection to whatever nation requested it of them; but this not with a view of serving one party, but that they might have an opportunity of subjecting both. In this manner they assisted the Mamertines against Hiero king of Syracuse, which brought on the wars with the Carthaginians, which terminated in the total destruction of that ancient republic, as has been related under the article CARTHAGE. The interval between the first and second Punic wars was by the Romans employed in reducing the Boii and Ligurians, who had revolted. These were Gaulish nations, who had always been very formidable to the Romans, and now gave one of their consuls a notable defeat. However, he soon after sufficiently revenged himself, and defeated the enemy with great slaughter; though it was not till some time after, and with a good deal of difficulty, that they were totally subdued. During this interval also, the Romans seized on the islands of Sardinia, Corsica, and Malta; and in the year 219 B. C. the two former were reduced to the form of a province. Papirius, who had subdued Corsica, demanded a triumph; but not having interest enough to obtain it, he took a method entirely new to do himself justice. He put

Rome,

169
Who are subdued, and the Romans become masters of all Italy.

170
Other conquests made by the Romans.

Rome. himself at the head of his victorious army, and marched to the temple of Jupiter Latiaris, on the hill of Alba, with all the pomp that attended triumphant victors at Rome. He made no other alteration in the ceremony, but that of wearing a crown of myrtle instead of a crown of laurel, and this on account of his having defeated the Corsicans in a place where there was a grove of myrtles. The example of Papirius was afterwards followed by a great many generals to whom the senate refused triumphs.

171
Illyricum
subdued.

The next year, when M. Æmilius Barbula and M. Junius Pera were consuls, a new war sprung up in a kingdom out of Italy. *Illyricum*, properly so called, which bordered upon Macedon and Epirus, was at this time governed by a woman named *Teuta*, the widow of king Agron, and guardian to her son Pinæus, who was under age. The success of her late husband against the Ætolians had flushed her to such a degree, that, instead of settling the affairs of her ward in peace, she commanded her subjects to cruise along the coast, seize all the ships they met, take what places they could, and spare no nation. Her pirates had, pursuant to her orders, taken and plundered many ships belonging to the Roman merchants; and her troops were then besieging the island of Issa in the Adriatic, though the inhabitants had put themselves under the protection of the republic. Upon the complaints therefore of the Italian merchants, and to protect the people of Issa, the senate sent two ambassadors to the Illyrian queen, Lucius and Caius Coruncanus, to demand of her that she would restrain her subjects from infesting the sea with pirates. She answered them haughtily, that she could only promise that her subjects should not for the future attack the Romans in her name, and by public authority: "but as for any thing more, it is not customary with us (said she) to lay restraints on our subjects, nor will we forbid them to reap those advantages from the sea which it offers them." Your customs then (replied the youngest of the ambassadors) are very different from ours. At Rome we make public examples of those subjects who injure others, whether at home or abroad. *Teuta*, we can, by our arms, force you to reform the abuses of your bad government." These unseasonable threatenings provoked *Teuta*, who was naturally a proud and imperious woman, to such a degree, that, without regard to the right of nations, she caused the ambassadors to be murdered on their return home.

When so notorious an infraction of the law of nations was known at Rome, the people demanded vengeance; and the senate having first honoured the manes of the ambassadors, by erecting, as was usual in such cases, statues three feet high to their memory, ordered a fleet to be equipped, and troops raised, with all possible expedition. But now *Teuta*, reflecting on the enormity of her proceedings, sent an embassy to Rome, assuring the senate that she had no hand in the murder of the ambassadors, and offering to deliver up to the republic those who had committed that barbarous assassination. The Romans being at that time threatened with a war from the Gauls, were ready to accept this satisfaction: but in the mean time the Illyrian fleet having gained some advantage over that of the Achæans, and taken the island of Corcyra near Epirus, this success made *Teuta* believe herself invincible, and forget the promise she had made to the Romans; nay, she

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Rome. sent her fleet to seize on the island of Issa, which the Romans had taken under their protection.

Hereupon the consuls for the new year, P. Posthumius Albinus and Cn. Fulvius Centumalus, embarked for *Illyricum*; Fulvius having the command of the fleet, which consisted of 100 galleys; and Posthumius of the land forces, which amounted to 20,000 foot, besides a small body of horse. Fulvius appeared with his fleet before Corcyra in the Adriatic, and was put in possession both of the island and city by Demetrius of Pharos, governor of the place for Queen *Teuta*. Nor was this all; Demetrius found means to make the inhabitants of Apollonia drive out the Illyrian garrison, and admit into their city the Roman troops. As Apollonia was one of the keys of *Illyricum* on the side of Macedon, the consuls, who had hitherto acted jointly, no sooner saw themselves in possession of it than they separated, the fleet cruising along the coast, and the army penetrating into the heart of the queen's dominions. The Andyræans, Parthini, and Atintanes, voluntarily submitted to Posthumius, being induced by the persuasions of Demetrius to shake off the Illyrian yoke. The consul being now in possession of most of the inland towns, returned to the coast, where, with the assistance of the fleet, he took many strong-holds, among which was Nutria, a place of great strength, and defended by a numerous garrison; so that it made a vigorous defence, the Romans having lost before it a great many private men, several legionary tribunes, and one quaestor. However, this loss was repaired by the taking of 40 Illyrian vessels, which were returning home laden with booty. At length the Roman fleet appeared before Issa, which, by *Teuta's* order, was still closely besieged, notwithstanding the losses she had sustained. However, upon the approach of the Roman fleet, the Illyrians dispersed; but the Pharians, who served among them, followed the example of their countryman Demetrius, and joined the Romans, to whom the Issani readily submitted.

In the mean time Sp. Corvilius and Q. Fabius Maximus being raised to the consulate a second time, Posthumius was recalled from *Illyricum*, and refused a triumph for having been too prodigal of the Roman blood at the siege of Nutria. His colleague Fulvius was appointed to command the land forces in his room, in quality of proconsul. Hereupon *Teuta*, who had founded great hopes on the change of the consuls, retired to one of her strong-holds called *Rhizon*, and from thence early in the spring sent an embassy to Rome. The senate refused to treat with her; but granted the young king a peace upon the following conditions: 1. That he should pay an annual tribute to the republic. 2. That he should surrender part of his dominions to the Romans. 3. That he should never suffer above three of his ships of war at a time to sail beyond Lyffus, a town on the confines of Macedon and *Illyricum*. The places he yielded to the Romans in virtue of this treaty, were the islands of Corcyra, Issa, and Pharos, the city of Dyrrhachium, and the country of the Atintanes. Soon after *Teuta*, either out of shame, or compelled by a secret article of the treaty, abdicated the regency, and Demetrius succeeded her.

Before this war was ended, the Romans were alarmed by new motions of the Gauls, and the great progress which the Carthaginians made in Spain. At this time

3 A

Rome.

174
The Gauls
of Insulria
and Liguria
subdu-
also ed.

Rome. also the fears of the people were excited by a prophecy said to be taken out of the Sybilline books, that the Gauls and Greeks should one day be in possession of Rome. This prophecy, however, the senate found means to elude, as they pretended, by burying two Gauls and two Greeks alive, and then telling the multitude that the Gauls and Greeks were now in the possession of Rome. The difficulties which superstition had raised being thus surmounted, the Romans made vast preparations against the Gauls, whom they seem to have dreaded above all other nations. Some say that the number of forces raised by the Romans on this occasion amounted to no fewer than 800,000 men. Of this incredible multitude 248,000 foot and 26,000 horse were Romans or Campanians; nevertheless, the Gauls, with only 50,000 foot and 20,000 horse, forced a passage through Hetruria, and took the road towards Rome. Here they had the good fortune at first to defeat one of the Roman armies; but being soon after met by two others, they were utterly defeated, with the loss of more than 50,000 of their number. The Romans then entered their country, which they cruelly ravaged; but a plague breaking out in their army, obliged them to return home. This was followed by a new war, in which those Gauls who inhabited Insubria and Liguria were totally subdued, and their country reduced to a Roman province. These conquests were followed by that of Istria; Dimalum, a city of importance in Illyricum; and Pharos, an island in the Adriatic sea.

The second Punic war for some time retarded the conquests of the Romans, and even threatened their state with entire destruction; but Hannibal being at last recalled from Italy, and entirely defeated at Zama, they made peace upon such advantageous terms as gave them an entire superiority over that republic, which they not long after entirely subverted, as has been related in the history of CARTHAGE.

173
The Roman empire
arrives at
its full
extent.

The successful issue of the second Punic war had greatly increased the extent of the Roman empire. They were now masters of all Sicily, the Mediterranean islands, and great part of Spain; and, through the dissensions of the Asiatic states with the king of Macedon, a pretence was now found for carrying their arms into these parts. The Gauls in the mean time, however, continued their incursions, but now ceased to be formidable; while the kings of Macedon, through misconduct, were first obliged to submit to a disadvantageous peace, and at last totally subdued (see MACEDON). The reduction of Macedon was soon followed by that of all Greece, either by the name of allies or otherwise: while Antiochus the Great, to whom Hannibal fled for protection, by an unsuccessful war first gave the Romans a footing in Asia (see SYRIA). The Spaniards and Gauls continued to be the most obstinate enemies. The former, particularly, were rather exterminated than reduced; and even this required the utmost care and vigilance of Scipio Æmilianus, the conqueror of Carthage, to execute. See SPAIN and NUMANTIA.

174
Sedition of
the Gracchi.

Thus the Romans attained to a height of power superior to any other nation in the world; but now a sedition broke out, which we may say was never terminated but with the overthrow of the republic. This had its origin from Tiberius Sempronius Gracchus, descended from a family which, though plebeian, was as illu-

strious as any in the commonwealth. His father had been twice raised to the consulate, was a great general, and had been honoured with two triumphs. But he was still more renowned for his domestic virtues and probity, than for his birth or valour. He married the daughter of the first Africanus, said to be the pattern of her sex, and the prodigy of her age; and had by her several children, of whom three only arrived to maturity of age, Tiberius Gracchus, Caius Gracchus, and a daughter named *Sempronia*, who was married to the second Africanus. Tiberius, the eldest, was deemed the most accomplished youth in Rome, with respect to the qualities both of body and mind. His extraordinary talents were heightened by a noble air, an engaging countenance, and all those winning graces of nature which recommend merit. He made his first campaigns under his brother-in-law, and distinguished himself on all occasions by his courage, and by the prudence of his conduct. When he returned to Rome, he applied himself to the study of eloquence; and at 30 years old was accounted the best orator of his age. He married the daughter of Appius Claudius, who had been formerly consul and censor, and was then prince of the senate. He continued for some time in the sentiments both of his own and his wife's family, and supported the interests of the patricians; but without openly attacking the popular faction. He was the chief author and negociator of that shameful necessary peace with the Numantines; which the senate, with the utmost injustice, disannulled, and condemned the consul, the quaestor, and all the officers who had signed it, to be delivered up to the Numantines (see NUMANTIA). The people indeed, out of esteem for Gracchus, would not suffer him to be sacrificed: but, however, he had just reason to complain, both of the senate and people, for passing so scandalous a decree against his general and himself, and breaking a treaty whereby the lives of so many citizens had been saved. But as the senate had chiefly promoted such base and iniquitous proceedings, he resolved in due time to show his resentment against the party which had contributed most to his disgrace.

In order to this, he stood for the tribuneship of the people; which he no sooner obtained, than he resolved to attack the nobility in the most tender part. They had usurped lands unjustly; cultivated them by slaves, to the great detriment of the public; and had lived for about 250 years in open defiance to the Licinian law, by which it was enacted that no citizen should possess more than 500 acres. This law Tib. Gracchus resolved to revive, and by that means revenge himself on the patricians. But it was not revenge alone which prompted him to embark in so dangerous an attempt. It is pretended, that his mother Cornelia animated him to undertake something worthy both of his and her family. The reproaches of his mother, the authority of some great men, namely of his father-in-law Appius Claudius, of P. Crassus the *pontifex maximus*, and of Mutius Scævola, the most learned civilian in Rome, and his natural thirst after glory, joined with an eager desire of revenge, conspired to draw him into this most unfortunate scheme.

The law, as he first drew it up, was very mild: for it only enacted, that those who possessed more than 500 acres of land should part with the overplus; and that the

Rome.

175
A new law
proposed by
Gracchus.

Rome. the full value of the said lands should be paid them out of the public treasury. The lands thus purchased by the public were to be divided among the poor citizens; and cultivated either by themselves or by freemen, who were upon the spot. Tiberius allowed every child of a family to hold 250 acres in his own name, over and above what was allowed to the father. Nothing could be more mild than this new law; since by the Licinian he might have absolutely deprived the rich of the lands they unjustly possessed, and made them accountable for the profits they had received from them during their long possession. But the rich patricians could not so much as bear the name of the *Licinian law*, though thus qualified. Those chiefly of the senatorial and equestrian order exclaimed against it, and were continually mounting the rostra one after another, in order to dissuade the people from accepting a law which, they said, would raise disturbances, that might prove more dangerous than the evils which Tiberius pretended to redress by the promulgation of it. Thus the zealous tribune was obliged day after day to enter the lists with fresh adversaries; but he ever got the better of them both in point of eloquence and argument.

The people were charmed to hear him maintain the cause of the unfortunate with so much success, and bestowed on him the highest commendations. The rich therefore had recourse to violence and calumny, in order to destroy, or at least to discredit, the tribune. It is said they hired assassins to dispatch him; but they could not put their wicked design in execution, Gracchus being always attended to and from the rostra by a guard of about 4000 men. His adversaries therefore endeavoured to ruin his reputation by the blackest calumnies. They gave out that he aimed at monarchy; and published pretended plots laid for crowning him king. But the people, without giving ear to such groundless reports, made it their whole business to encourage their tribune, who was hazarding both his life and reputation for their sakes.

When the day came on which this law was to be accepted or rejected by the people assembled in the comitium, Gracchus began with haranguing the mighty croud which an affair of such importance had brought together both from the city and country. In his speech he showed the justice of the law with so much eloquence, made so moving a description of the miseries of the meaner sort of people, and at the same time set forth in such odious colours the usurpation of the public lands, and the immense riches which the avarice and rapaciousness of the great had raked together, that the people, transported with fury, demanded with loud cries the billets, that they might give their suffrages. Then Gracchus, finding the minds of the citizens in that warmth and emotion which was necessary for the success of his design, ordered the law to be read.

176
Opposed by the tribune Octavius. But unluckily one of the tribunes, by name *Marcus Octavius Cæcina*, who had always professed a great friendship for Gracchus, having been gained over by the patricians, declared against the proceedings of his friend and colleague; and pronounced the word which had been always awful in the mouth of a tribune of the people, *Veto*, "I forbid it." As Octavius was a man of an unblameable character, and had hitherto been very zealous for the publication of the law, Gracchus

Rome. was greatly surprised at this unexpected opposition from his friend. However, he kept his temper, and only desired the people to assemble again the next day to hear their two tribunes, one in defence of, the other in opposition to, the law proposed. The people met at the time appointed; when Gracchus addressing himself to his colleague, conjured him by the mutual duties of their function, and by the bonds of their ancient friendship, not to oppose the good of the people, whom they were bound in honour to protect against the usurpation of the great: nay, taking his colleague aside, he addressed him thus, "Perhaps you are personally concerned to oppose this law; if so, I mean, if you have more than the five hundred acres, I myself, poor as I am, engage to pay you in money what you will lose in land." But Octavius, either out of shame, or from a principle of honour, continued immovable in the party he had embraced.

Gracchus therefore had recourse to another expedient; which was to suspend all the magistrates in Rome from the execution of their offices. It was lawful for any tribune to take this step, when the passing of the law which he proposed was prevented by mere chicanery. After this, he assembled the people anew, and made a second attempt to succeed in his design. When all things were got ready for collecting the suffrages, the rich privately conveyed away the urns in which the tablets were kept. This kindled the tribune's indignation, and the rage of the people. The comitium was like to become a field of battle, when two venerable senators, Manlius and Fulvius, very seasonably interposed; and throwing themselves at the tribune's feet, prevailed upon him to submit his law to the judgment of the conscript fathers. This was making the senators judges in their own cause: but Gracchus thought the law so undeniably just, that he could not persuade himself that they would reject it; and if they did, he knew that the incensed multitude would no longer keep any measures with them.

The senate, who wanted nothing but to gain time, affected delays, and came to no resolution. There were indeed some among them, who, out of a principle of equity, were for paying some regard to the complaints of the tribune, and for sacrificing their own interest to the relief of the distressed. But the far greater part would not hear of any composition whatsoever. Hereupon Gracchus brought the affair anew before the people, and earnestly intreated his colleague Octavius to drop his opposition, in compassion to the many unfortunate people for whom he interceded. He put him in mind of their ancient friendship, took him by the hand, and affectionately embraced him. But still Octavius was inflexible. Hereupon Gracchus resolved to deprive Octavius of his tribuneship, since he alone obstinately withstood the desires of the whole body of so great a people. Having therefore assembled the people, he told them, that since his colleague and he were divided in opinion, and the republic suffered by their division, it was the province of the tribes assembled in comitia to re-establish concord among their tribunes. "If the cause I maintain (said he) be, in your opinion, unjust, I am ready to give up my seat in the college. On the contrary, if you judge me worthy of being continued in your service in this station, deprive him of the tribuneship who alone obstructs my wishes. As soon as you shall have

Rome. nominated one to succeed him, the law will pass without opposition." Having thus spoken, he dismissed the assembly, after having summoned them to meet again the next day.

And now Gracchus, being soured with the opposition he had met with from the rich, and from his obstinate colleague, and being well apprised that the law would pass in any form in which he should think fit to propose it, resolved to revive it as it was at first passed, without abating any thing of its severity. There was no exception in favour of the children in families; or reimbursement promised to those who should part with the lands they possessed above 500 acres. The next day the people being assembled in vast crowds on this extraordinary occasion, Gracchus made fresh applications to Octavius, but to no purpose; he obstinately persisted in his opposition. Then Gracchus turning to the people, "Judge you, (said he), which of us deserves to be deprived of his office." At these words the first tribe voted, and declared for the deposition of Octavius. Upon which Gracchus, suspending the ardour of the tribes, made another effort to bring over his opponent by gentle methods. But all his endeavours proving ineffectual, the other tribes went on to vote in their turns, and followed the example of the first. Of 35 tribes, 17 had already declared against Octavius, and the 18th was just going to determine the affair, when Gracchus, being willing to try once more whether he could reclaim his colleague, suspended the collecting of the suffrages; and addressing Octavius in the most pressing terms, conjured him not to expose himself, by his obstinacy, to so great a disgrace, nor to give him the grief of having cast a blemish upon his colleague and friend, which neither time nor merit would ever wipe off. Octavius, however, continuing obstinate, was deposed, and the law passed as Gracchus had proposed it the last time. The deposed tribune was dragged from the rostra by the incensed multitude, who would have insulted him further, had not the senators and his friends facilitated his escape.

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Who is de-
posed, and
the law
passed.

The Licinian law being thus revived with one consent both by the city and country tribes, Gracchus caused the people to appoint triumvirs, or three commissioners, to hasten its execution. In this commission the people gave Gracchus the first place; and he had interest enough to get his father-in-law Appius Claudius, and his brother Caius Gracchus, appointed his colleagues. These three spent the whole summer in travelling through all the Italian provinces, to examine what lands were held by any person above 500 acres, in order to divide them among the poor citizens. When Gracchus returned from his progress, he found, by the death of his chief agent, that his absence had not abated either the hatred of the rich, or the love of the poor, toward him. As it plainly appeared that the deceased had been poisoned, the tribune took this occasion to apply himself again to his protectors, and implore their assistance against the violence and treachery of his enemies. The populace, more attached after this accident to their hero than ever, declared they would stand by him to the last drop of their blood; and this their zeal encouraged him to add a new clause to the law, viz. that the commissioners should likewise inquire what lands had been usurped from the republic. This was touching the senators in a most tender point; for most

of them had appropriated to themselves lands belonging to the republic. But after all, the tribune, upon a strict inquiry, found that the lands taken from the rich would not be enough to content all the poor citizens. But the following accident eased him of this difficulty, and enabled him to stop the murmurs of the malcontents among the people.

Attalus Philometer, king of Pergamus, having be-
queathed his dominions and effects to the Romans, Eu-
demus the Pergamean brought his treasures to Rome
at this time; and Gracchus immediately got a new law
passed, enacting, that this money should be divided
among the poor citizens who could not have lands;
and that the disposal of the revenues of Pergamus
should not be in the senate, but in the comitia. By
these steps Gracchus most effectually humbled the se-
nate; who, in order to discredit him among the people,
gave out that Eudemus, who had brought the king's
will to Rome, had left with Gracchus the royal diadem
and mantle of Attalus, which the law-making tribune
was to use when he should be proclaimed king of Rome.
But these reports only served to make Gracchus be-
more upon his guard, and to inspire the people with
an implacable hatred against the rich who were the
authors of them. Gracchus being now, by his power
over the minds of the multitude, absolute master of their
suffrages, formed a design of raising his father-in-law
Appius Claudius to the consulate next year, of promo-
ting his brother Caius to the tribuneship, and getting
himself continued in the same office. The last was
what most nearly concerned him; his person, as long
as he was in office, being sacred and inviolable. As
the senate was very active in endeavouring to get such
only elected into the college of tribunes as were enemies
to Gracchus and his faction, the tribune left no stone
unturned to secure his election. He told the people,
that the rich had resolved to assassinate him as soon as
he was out of his office; he appeared in mourning, as
was the custom in the greatest calamities; and bringing
his children, yet young, into the forum, recommended
them to the people in such terms, as showed that he
despaired of his own preservation. At this sight the
populace returned no answer, but by outcries and me-
naces against the rich.

When the day appointed for the election of new
tribunes came, the people were ordered to assemble in
the capitol in the great court before the temple of Ju-
piter. The tribes being met, Gracchus produced his
petition, intreating the people to continue him one year
longer in the office of tribune, in consideration of the
great danger to which he was exposed, the rich having
vowed his destruction as soon as his person should be no
more sacred. This was indeed an unusual request, it
having been long customary not to continue any tribune
in his office above a year. However, the tribes began
to vote, and the two first declared for Gracchus. Here-
upon the rich made great clamours; which terrified
Rubrius Varro, who presided in the college of tribunes
that day, to such a degree, that he resigned his place to
Q. Mummius, who offered to preside in his room. But
this raised a tumult among the tribunes themselves; so
that Gracchus wisely dismissed the assembly, and order-
ed them to meet again the next day.

In the mean time the people, being sensible of what
importance it was to them to preserve the life of so
powerful

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The trea-
sures of At-
talus di-
vided a-
mong the
people by
Gracchus.

Rome.

179
A conspiracy
against
his life.

powerful a protector, not only conducted him home, but watched by turns all night at his door. Next morning by break of day, Gracchus having assembled his friends, led them from his house, and posted one half of them in the comitium, while he went up himself with the other to the capitol. As soon as he appeared, the people saluted him with loud acclamations of joy. But scarce was he placed in his tribunal, when Fulvius Flaccus a senator, and friend to Gracchus, breaking through the crowd, came up to him, and gave him notice, that the senators, who were assembled in the temple of Faith, which almost touched that of Jupiter Capitolinus, had conspired against his life, and were resolved to attack him openly on his very tribunal. Hereupon Gracchus tucked up his robe, as it were, to prepare for a battle; and, after his example, some of his party, seizing the staves of the apparitors, prepared to defend themselves, and to repel force by force. These preparations terrified the other tribunes; who immediately abandoned their places in a cowardly manner, and mixed with the crowd; while the priests ran to shut the gates of the temple, for fear of its being profaned. On the other hand, the friends of Gracchus, who were dispersed by parties in different places, cried out, *We are ready: What must we do?* Gracchus, whose voice could not be heard by all his adherents on account of the tumult, the clamours, and the confused cries of the different parties, put his hand to his head; which was the signal agreed on to prepare for battle. But some of his enemies, putting a malicious construction upon that gesture, immediately flew to the senate, and told the fathers, that the seditious tribune had called for the crown to be put upon his head. Hereupon the senators, fancying they already saw the king of Pergamus's diadem on the tribune's head, and the royal mantle on his shoulders, resolved to give the consul leave to arm his legions, treat the friends of Gracchus as enemies, and turn the comitium into a field of battle.

But the consul Mutius Scævola, who was a prudent and moderate man, refused to be the instrument of their rash revenge, and to dishonour his consulate with the massacre of a disarmed people. As Calpurnius Piso, the other consul, was then in Sicily, the most turbulent among the senators cried out, "Since one of our consuls is absent, and the other betrays the republic, let us do ourselves justice; let us immediately go and demolish with our own hands this idol of the people." Scipio Nasica, who had been all along for violent measures, inveighed bitterly against the consul for refusing to succour the republic in her greatest distress. Scipio Nasica was the great grandson of Cneius Scipio, the uncle of the first Africanus, and consequently cousin to the Gracchi by their mother Cornelia. But nevertheless not one of the senators betrayed a more irreconcilable hatred against the tribune than he. When the prudent consul refused to arm his legions, and put the adherents of Gracchus to death contrary to the usual forms of justice, he set no bounds to his fury, but, rising up from his place, cried out like a madman, "Since our consul betrays us, let those who love the republic follow me." Having uttered these words, he immediately walked out of the temple, attended by a great number of senators.

Nasica threw his robe over his shoulders, and having covered his head with it, advanced with his followers into the crowd, where he was joined by a company of the clients and friends of the patricians, armed with staves and clubs. These, falling indifferently upon all who stood in their way, dispersed the crowd. Many of Gracchus's party took to their heels; and in that tumult all the seats being overturned and broken, Nasica, armed with the leg of a broken bench, knocked down all who opposed him, and at length reached Gracchus. One of his party seized the tribune by the lappet of his robe: but he, quitting his gown, fled in his tunic; and as he was in that hurry of spirits, which is inseparable from fear, leaping over the broken benches, he had the misfortune to slip and fall. As he was getting up again, he received a blow on the head, which stunned him: then his adversaries rushing in upon him, with repeated blows put an end to his life.

Rome was by his death delivered, according to Cicero, from a domestic enemy, who was more formidable to her than even that Numantia, which had first kindled his resentments. Perhaps no man was ever born with greater talents, or more capable of aggrandizing himself, and doing honour to his country. But his great mind, his manly courage, his lively, easy, and powerful eloquence, were, says Cicero, like a sword in the hands of a madman. Gracchus abused them, not in supporting an unjust cause, but in conducting a good one with too much violence. He went so far as to make some believe that he had really something in view besides the interest of the people whom he pretended to relieve; and therefore some historians have represented him as a tyrant. But the most judicious writers clear him from this imputation, and ascribe his first design of reviving the Licinian law to an eager desire of being revenged on the senators for the affront they had very unjustly put upon him, and the consul Mancinus, as we have hinted above. The law he attempted to revive had an air of justice, which gave a sanction to his revenge, without casting any blemish on his reputation.

The death of Gracchus did not put an end to the tumult. Above 300 of the tribune's friends lost their lives in the fray; and their bodies were thrown, with that of Gracchus, into the Tiber. Nay, the senate carried their revenge beyond the fatal day which had stained the Capitol with Roman blood. They fought for all the friends of the late tribune, and without any form of law assassinated some, and forced others into banishment. Caius Billius, one of the most zealous defenders of the people, was seized by his enemies, and shut up in a cask with snakes and vipers, where he miserably perished. Though the laws prohibited any citizen to take away the life of another before he had been legally condemned, Nasica and his followers were acquitted by the senate, who enacted a decree, justifying all the cruelties committed against Gracchus and his adherents.

These disturbances were for a short time interrupted by a revolt of the slaves in Sicily, occasioned by the cruelty of their masters; but they being soon reduced, the contests about the *Sempronian law*, as it was called, again took place. Both parties were determined not to yield; and therefore the most fatal effects ensued. The first thing of consequence was the death of Sci-

Rome.

180
A scuffle
ensues, in
which
Gracchus
is killed.181
His friends
massacred.182
The distur-
bances in-
crease.

Rome.

pio Africanus the Second, who was privately strangled in his bed by some of the partisans of the plebeian party, about 129 B. C. Caius Gracchus, brother to him who had been formerly killed, not only undertook the revival of the Sempronian law, but proposed a new one, granting the rights of Roman citizens to all the Italian allies, who could receive no share of the lands divided in consequence of the Sempronian law. The consequences of this were much worse than the former; the flame spread through all Italy; and the nations who had made war with the republic in its infancy again commenced enemies more formidable than before. Fregellæ, a city of the Volsci, revolted: but being suddenly attacked, was obliged to submit, and was rased to the ground; which quieted matters for the present. Gracchus, however, still continued his attempts to humble the senate and the rest of the patrician body: the ultimate consequence of which was, that a price was set on his head, and that of Fulvius his confederate, no less than their weight in gold, to any one who should bring them to Opimius the chief of the patrician party. Thus the custom of proscription was begun by the patricians, of which they themselves soon had enough. Gracchus and Fulvius were sacrificed, but the disorders of the republic were not so easily cured.

182
The custom
of proscrip-
tion begun.

The inundation of the Cimbri and Teutones put a stop to the civil discords for some time longer; but they being defeated, as related under the articles CIMBRI and TEUTONES, nothing prevented the troubles from being revived with greater fury than before, except the war with the Sicilian slaves, which had again commenced with more dangerous circumstances than ever. But this war being totally ended about 99 B. C. no farther obstacle remained. Marius, the conqueror of Jugurtha* and the Cimbri, undertook the cause of the plebeians against the senate and patricians. Having associated himself with Apuleius and Glaucia, two factious men, they carried their proceedings to such a length, that an open rebellion commenced, and Marius himself was obliged to act against his allies. Peace, however, was for the present restored by the massacre of Apuleius and Glaucia, with a great number of their followers; upon which Marius thought proper to leave the city.

* See Nu-
midia.

While factious men thus endeavoured to tear the republic in pieces, the attempts of well-meaning people to heal those divisions served only to involve the state in calamities still more grievous. The consuls observed, that many individuals of the Italian allies lived at Rome, and falsely pretended to be Roman citizens. By means of them, it was likewise perceived, that the plebeian party had acquired a great deal of its power; as the votes of these pretended citizens were always at the service of the tribunes. The consuls therefore got a law passed, commanding all those pretended citizens to return home. This was so much resented by the Italian states, that an universal defection took place. A scheme was then formed by M. Livius Drusus, a tribune of the people, to reconcile all orders of men; but this only made matters worse, and procured his own assassination. His death seemed a signal for war. The Marfi, Peligni, Samnites, Campanians, and Lucanians, and in short all the provinces from the river Liris to the Adriatic, revolted at once, and formed themselves into a republic, in opposition to that of Rome.

183
The social
war.

The haughty Romans were now made thoroughly sensible that they were not invincible: they were defeated in almost every engagement; and must soon have yielded, had they not fallen upon a method of dividing their enemies. A law was passed, enacting, that all the nations in Italy, whose alliance with Rome was indisputable, should enjoy the right of Roman citizens. This drew off several nations from the alliance; and at the same time, Sylla taking upon him the command of the Roman armies, fortune soon declared in favour of the latter.

The success of Rome against the allies served only to bring greater miseries upon herself. Marius and Sylla became rivals; the former adhering to the people, and the latter to the patricians. Marius associated with one of the tribunes named *Sulpitius*; in conjunction with whom he raised such disturbances, that Sylla was forced to retire from the city. Having thus driven off his rival, Marius got himself appointed general against Mithridates † king of Pontus; but the soldiers refused to obey any other than Sylla. A civil war immediately ensued, in which Marius was driven out in his turn, and a price set upon his head and that of *Sulpitius*, with many of their adherents. *Sulpitius* was soon seized and killed; but Marius made his escape. In the mean time, however, the cruelties of Sylla rendered him obnoxious both to the senate and people; and Cinna, a furious partisan of the Mariian faction, being chosen consul, cited him to give an account of his conduct. Upon this Sylla thought proper to set out for Asia: Marius was recalled from Africa, whither he had fled; and immediately on his landing in Italy, was joined by a great number of shepherds, slaves, and men of desperate fortunes; so that he soon saw himself at the head of a considerable army.

Cinna, in the mean time, whom the senators had deposed and driven out of Rome, solicited and obtained a powerful army from the allies; and being joined by Sertorius, a most able and experienced general, the two, in conjunction with Marius, advanced towards the capital; and as their forces daily increased, a fourth army was formed under the command of *Papirius Carbo*. The senate raised some forces to defend the city; but the troops being vastly inferior in number, and likewise inclined to the contrary side, they were obliged to open their gates to the confederates. Marius entered at the head of a numerous guard, composed of slaves, whom he called his *Bardizans*, and whom he designed to employ in revenging himself on his enemies. The first order he gave these assassins was, to murder all who came to salute him, and were not answered with the like civility. As every one was forward to pay his compliments to the new tyrant, this order proved the destruction of vast numbers. At last these *Bardizans* abandoned themselves to such excesses in every kind of vice, that Cinna and Sertorius ordered their troops to fall upon them; which being instantly put in execution, they were all cut off to a man.

By the destruction of his guards, Marius was reduced to the necessity of taking a method of gratifying his revenge somewhat more tedious, though equally effectual. A conference was held between the four chiefs, in which Marius seemed quite frantic with rage. Sertorius endeavoured to moderate his fury; but, being

Rome.

† See Pon-
tus.

184
Horrid
cruelties
committed
by Cinna,
Marius, &c.

Rome. over-ruled by Cinna and Carbo, a resolution was taken to murder without mercy all the senators who had opposed the popular faction. This was immediately put in execution. A general slaughter commenced, which lasted five days, and during which the greatest part of the obnoxious senators were cut off, their heads stuck upon poles over-against the rostra, and their bodies dragged with hooks into the forum, where they were left to be devoured by dogs. Sylla's house was demolished, his goods confiscated, and he himself declared an enemy to his country; however, his wife and children had the good fortune to make their escape.—This massacre was not confined to the city of Rome. The soldiers, like as many blood-hounds, were dispersed over the country in search of those who fled. The neighbouring towns, villages, and all the highways, swarmed with assassins; and on this occasion Plutarch observes with great concern, that the most sacred ties of friendship and hospitality are not proof against treachery, in the day of adversity, for there were but very few who did not discover their friends who had fled to them for shelter.

185
Sylla threatens re-venge.

This slaughter being over, Cinna named himself and Marius consuls for the ensuing year; and these tyrants seemed resolved to begin the new year as they had ended the old one: but, while they were preparing to renew their cruelties, Sylla, having proved victorious in the east, sent a long letter to the senate, giving an account of his many victories, and his resolution of returning to Rome, not to restore peace to his country, but to revenge himself of his enemies, *i. e.* to destroy those whom Marius had spared. This letter occasioned an universal terror. Marius, dreading to enter the lists with such a renowned warrior, gave himself up to excessive drinking, and died. His son was associated with Cinna in the government, though not in the consulship, and proved a tyrant no less cruel than his father. The senate declared one Valerius Flaccus general of the forces in the east, and appointed him a considerable army; but the troops all to a man deserted him, and joined Sylla. Soon after, Cinna declared himself consul a third time, and took for his colleague Papirius Carbo; but the citizens, dreading the tyranny of these inhuman monsters, fled in crowds to Sylla, who was now in Greece. To him the senate sent deputies, begging that he would have compassion on his country, and not carry his resentment to such a length as to begin a civil war: but he replied, that he was coming to Rome full of rage and revenge; and that all his enemies, if the Roman people consented to it, should perish either by the sword or the axes of the executioners. Upon this several very numerous armies were formed against him; but, through the misconduct of the generals who commanded them, these armies were everywhere defeated, or went over to the enemy. Pompey, afterwards styled *the Great*, signalized himself in this war, and embraced the party of Sylla. The Italian nations took some one side and some another, as their different inclinations led them. Cinna, in the mean time, was killed in a tumult, and young Marius and Carbo succeeded him; but the former having ventured an engagement with Sylla, was by him defeated, and forced to fly to Præneste, where he was closely besieged.

Thus was Rome reduced to the lowest degree of misery, when one Pontius Telesinus, a Samnite of great experience in war, projected the total ruin of the city. He had joined, or pretended to join, the generals of the Marian faction with an army of 40,000 men; and therefore marched towards Præneste, as if he designed to relieve Marius. By this means he drew Sylla and Pompey away from the capital; and then, decamping in the night, over-reached these two generals, and by break of day was within 10 furlongs of the Collatine gate. He then pulled off the mask; and declaring himself as much an enemy to Marius as to Sylla, told his troops, that it was not his design to assist one Roman against another, but to destroy the whole race. "Let fire and sword (said he) destroy all; let no quarter be given; mankind can never be free as long as one Roman is left alive."—Never had this proud metropolis been in greater danger; nor ever had any city a more narrow escape. The Roman youth marched out to oppose him, but were driven back with great slaughter. Sylla himself was defeated, and forced to fly to his camp. Telesinus advanced with more fury than ever; but, in the mean time, the other wing of his army having been defeated by M. Crassus, the victorious general attacked the body where Telesinus commanded, and by putting them to flight, saved his country from the most imminent danger.

Rome. 186
Rome in the utmost danger from Telesinus a Samnite.

Sylla, having now no enemy to fear, marched first to Aternæ, and thence to Rome. From the former city he carried 8000 prisoners to Rome, and caused them all to be massacred at once in the circus. His cruelty next fell upon the Prænestines, 12,000 of whom were massacred without mercy. Young Marius had killed himself, in order to avoid falling into the hands of such a cruel enemy. Soon after, the inhabitants of Norba, a city of Campania, finding themselves unable to resist the forces of the tyrant, set fire to their houses, and all perished in the flames. The taking of these cities put an end to the civil war, but not to the cruelties of Sylla. Having assembled the people in the comitium, he told them, that he was resolved not to spare a single person who had borne arms against him. This cruel resolution he put in execution with the most unrelenting vigour; and having at last cut off all those whom he thought capable of opposing him, Sylla caused himself to be declared perpetual dictator, or, in other words, king and absolute sovereign of Rome.

187
Monstrous cruelty of Sylla.

This revolution happened about 80 B. C. and from this time we may date the loss of the Roman liberty. Sylla indeed resigned his power in two years; but the citizens of Rome having once submitted, were ever after more inclined to submit to a master. Though individuals retained the same enthusiastic notions of liberty as before, yet the minds of the generality seem from this time to have inclined towards monarchy. New masters were indeed already prepared for the republic. Cæsar and Pompey had eminently distinguished themselves by their martial exploits, and were already rivals. They were, however, for some time prevented from raising any disturbances by being kept at a distance from each other. Sertorius, one of the generals of the Marian faction, and the only one of them possessed either of honour or probity, had retired into

188
He is proclaimed perpetual dictator.

Rome.

into Spain, where he erected a republic independent of Rome. Pompey and Metellus, two of the best reputed generals in Rome, were sent against him; but instead of conquering, they were on all occasions conquered by him, and obliged to abandon their enterprise with disgrace. At last Sertorius was treacherously murdered; and the traitors, who after his death usurped the command, being totally destitute of his abilities, were easily defeated by Pompey: and thus that general reaped an undeserved honour from concluding the war with success.

189
Pompey
and Crassus
assume
great au-
thority.

The Spanish war was scarce ended, when a very dangerous one was excited by Spartacus, a Thracian gladiator. For some time this rebel proved very successful; but at last was totally defeated and killed by Crassus. The fugitives, however, rallied again, to the number of 5000; but, being totally defeated by Pompey, the latter took occasion from thence to claim the glory which was justly due to Crassus. Being thus become extremely popular, and setting no bounds to his ambition, he was chosen consul along with Crassus. Both generals were at the head of powerful armies; and a contest between them immediately began about who should first lay down their arms. With difficulty they were in appearance reconciled, and immediately began to oppose one another in a new way. Pompey courted the favour of the people, by reinstating the tribunes in their ancient power, which had been greatly abridged by Sylla. Crassus, though naturally covetous, entertained the populace with surprising profusion at 10,000 tables, and at the same time distributed corn sufficient to maintain their families for three months.—These prodigious expences will seem less surprising, when we consider that Crassus was the richest man in Rome, and that his estate amounted to upwards of 7000 talents, *i. e.* 1,356,250 l. sterling. Notwithstanding his utmost efforts, however, Pompey still had the superiority; and was therefore proposed as a proper person to be employed for clearing the seas of pirates. In this new station a most extensive power was to be granted to him. He was to have an absolute authority for three years over all the seas within the straits or pillars of Hercules, and over all the countries for the space of 400 furlongs from the sea. He was empowered to raise as many soldiers and mariners as he thought proper; to take what sums of money he pleased out of the public treasury without being accountable for them; and to choose out of the senate fifteen senators to be his lieutenants, and to execute his orders when he himself could not be present. The sensible part of the people were against investing one man with so much power; but the unthinking multitude rendered all opposition fruitless. The tribune Roscius attempted to speak against it, but was prevented by the clamours of the people. He then held up two of his fingers, to show that he was for dividing that extensive commission between two persons: but on this the assembly burst out into such hideous outcries, that a crow flying accidentally over the comitium, was stunned with the noise, and fell down among the rabble. This law being agreed to, Pompey executed his commission so much to the public satisfaction, that on his return a new law was proposed in his favour. By this he was to be appointed general of all the forces in Asia; and as he was still to retain the sovereignty of the seas, he was now in

fact made sovereign of all the Roman empire.—This law was supported by Cicero and Cæsar, the former aspiring at the consulate, and the latter pleased to see the Romans so readily appointing themselves a master. Pompey, however, executed his commission with the utmost fidelity and success, completing the conquest of Pontus, Albania, Iberia, &c. which had been successfully begun by Sylla and Lucullus.

But while Pompey was thus aggrandising himself, the republic was on the point of being subverted by a conspiracy formed by Lucius Sergius Catiline. He was descended from an illustrious family; but having quite ruined his estate, and rendered himself infamous by a series of the most detestable crimes, he associated with a number of others in circumstances similar to his own, in order to repair their broken fortunes by ruining their country. Their scheme was to murder the consuls together with the greatest part of the senators, set fire to the city in different places, and then seize the government. This wicked design miscarried twice; but was not on that account dropped by the conspirators. Their party increased every day; and both Cæsar and Crassus, who since the departure of Pompey had studied to gain the affections of the people as far as possible, were thought to have been privy to the conspiracy. At last, however, the matter was discovered by means of a young knight, who had indiscreetly revealed the secret to his paramour. Catiline then openly took the field, and soon raised a considerable army: but was utterly defeated and killed about 62 B. C.; and thus the republic was freed from the present danger.

In the mean time, Cæsar continued to advance in popularity and in power. Soon after the defeat of Catiline, he was created pontifex maximus; and after that was sent into Spain, where he subdued several nations that had never before been subject to Rome.—While he was thus employed, his rival Pompey returned from the east, and was received with the highest honours; but though still as ambitious as ever, he now affected extraordinary modesty, and declined accepting of the applause which was offered him. His aim was to assume a sovereign authority without seeming to desire it; but he was soon convinced, that, if he desired to reign over his fellow-citizens, it must be by force of arms. He therefore renewed his intrigues, and spared no pains, however mean and scandalous, to increase his popularity. Cæsar, on his return from Spain, found the sovereignty divided between Crassus and Pompey, each of whom was ineffectually struggling to get the better of the other. Cæsar, no less ambitious than the other two, proposed that they should put an end to their differences, and take him for a partner in their power. In short, he projected a triumvirate, or association of three persons, (Pompey, Crassus, and himself), in which should be lodged the whole power of the senate and people; and, in order to make their confederacy more lasting, they bound themselves by mutual oaths and promises to stand by each other, and suffer nothing to be undertaken or carried into execution without the unanimous consent of all the three.

Thus was the liberty of the Romans taken away a second time, nor did they ever afterwards recover it; though at present none perceived that this was the case, except

Rome.

190
Conspiracy
of Catiline.

191

The first
triumvirate.

Rome. except Cato. The association of the triumvirs was for a long time kept secret; and nothing appeared to the people except the reconciliation of Pompey and Crassus, for which the state reckoned itself indebted to Cæsar. The first consequence of the triumvirate was the consulship of Julius Cæsar. But though this was obtained by the favour of Pompey and Crassus, he found himself disappointed in the colleague he wanted to associate with him in that office. He had pitched upon one whom he knew he could manage as he pleased, and distributed large sums among the people in order to engage them to vote for him. The senate, however, and even Cato himself, resolved to defeat the triumvir at his own weapons; and having therefore set up another candidate, distributed such immense sums on the opposite side, that Cæsar, notwithstanding the vast riches he had acquired, was forced to yield. This defeat proved of small consequence. Cæsar set himself to engage the affections of the people; and this he did, by an agrarian law, so effectually, that he was in a manner idolized. The law was in itself very reasonable and just; nevertheless, the senate, perceiving the design with which it was proposed, thought themselves bound to oppose it. Their opposition, however, proved fruitless: the consul Bibulus, who shewed himself most active in his endeavours against it, was driven out of the assembly with the greatest indignity, and from that day became of no consideration; so that Cæsar was reckoned the sole consul.

The next step taken by Cæsar was to secure the knights, as he had already done the people; and for this purpose he abated a third of the rents which they annually paid into the treasury; after which he governed Rome with an absolute sway during the time of his consulship. The reign of this triumvir, however, was ended by his expedition into Gaul, where his military exploits acquired him the highest reputation.—Pompey and Crassus in the mean time became consuls, and governed as despotically as Cæsar himself had done. On the expiration of their first consulship, the republic fell into a kind of anarchy, entirely owing to the disorders occasioned by the two late consuls. At last, however, this confusion was ended by raising Crassus and Pompey to the consulship a second time. This was no sooner done, than a new partition of the empire was proposed. Crassus was to have Syria and all the eastern provinces, Pompey was to govern Africa and Spain, and Cæsar to be continued in Gaul, and all this for the space of five years. This law was passed by a great majority; upon which Crassus undertook an expedition against the Parthians, whom he imagined he should easily overcome, and then enrich himself with their spoils; Cæsar applied with great assiduity to the completing of the conquest of Gaul; and Pompey having nothing to do in his province, staid at Rome to govern the republic alone.

The affairs of the Romans were now hastening to a crisis. Crassus, having oppressed all the provinces of the east, was totally defeated and killed by the Parthians*; after which the two great rivals Cæsar and Pompey were left alone, without any third person who could hold the balance between them, or prevent the deadly quarrels which were about to ensue. Matters, however, continued pretty quiet till Gaul was reduced to a Roman province †. The question then was, whe-

ther Cæsar or Pompey should first resign the command of their armies, and return to the rank of private persons. As both parties saw, that whoever first laid down his arms must of course submit to the other, both refused to disarm themselves. As Cæsar, however, had amassed immense riches in Gaul, he was now in a condition not only to maintain an army capable of vying with Pompey, but even to buy over the leading men in Rome to his interest. One of the consuls, named *Æmilius Paulus*, cost him no less than 1500 talents, or 310,625 l. sterling; but the other, named *Marcellus*, could not be gained at any price. Pompey had put at the head of the tribunes one Scribonius Curio, a young patrician of great abilities, but so exceedingly debauched and extravagant, that he owed upwards of four millions and a half of our money. Cæsar, by enabling him to satisfy his creditors, and supplying him with money to pursue his debaucheries, secured him in his interest; and Curio, without seeming to be in Cæsar's interest, found means to do him the most essential service. He proposed that both generals should be recalled; being well assured that Pompey would never consent to part with his army, or lay down the government of Spain with which he had been invested, so that Cæsar might draw from Pompey's refusal a pretence for continuing himself in his province at the head of his troops. This proposal threw the opposite party into great embarrassments; and while both professed their pacific intentions, both continued in readiness for the most obstinate and bloody war.—Cicero took upon himself the office of mediator; but Pompey would hearken to no terms of accommodation. The orator, surprised to find him so obstinate, at the same time that he neglected to strengthen his army, asked him with what forces he designed to make head against Cæsar? To which the other answered, that he needed but stamp with his foot, and an army would start up out of the ground. This confidence he assumed because he persuaded himself that Cæsar's men would abandon him if matters came to extremities. Cæsar, however, though he affected great moderation, yet kept himself in readiness for the worst; and therefore, when the senate passed the fatal decree for a civil war, he was not in the least alarmed. This decree was issued in the year 49 B. C. and was expressed in the following words: "Let the consuls for the year, the proconsul Pompey, the prætors, and all those in or near Rome who have been consuls, provide for the public safety by the most proper means." This decree was no sooner passed, than the consul Marcellus went, with his colleague Lentulus, to an house at a small distance from the town, where Pompey then was; and presenting him with a sword, "We require you (said he) to take upon you with this the defence of the republic, and the command of her troops." Pompey obeyed; and Cæsar was by the same decree divested of his office, and one Lucius Domitius appointed to succeed him, the new governor being empowered to raise 4000 men in order to take possession of his province.

War being thus resolved on, the senate and Pompey began to make the necessary preparations for opposing Cæsar. The attempt of the latter to withstand their authority they termed a *tumult*; from which contemptible epithet it appeared that they either did not know, or did not dread, the enemy whom they were bringing upon themselves. However, they ordered 30,000 Ro-

Rome.

193
The decree
for a civil
war.

* See Parthia.

192
Rivalship
of Cæsar
and Pom-
pey.
† See Gaul.

Rome.

man forces to be assembled, together with as many foreign troops as Pompey should think proper; the expense of which armament was defrayed from the public treasury. The governments of provinces, and all public honours, were bestowed upon such as were remarkable for their attachment to Pompey and their enmity to Cæsar. The latter, however, was by no means wanting in what concerned his own interest. Three of the tribunes who had been his friends were driven out of Rome, and arrived in his camp disguised like slaves. Cæsar showed them to his army in this ignominious habit; and, setting forth the iniquity of the senate and patricians, exhorted his men to stand by their general under whom they had served so long with success; and finding by their acclamations that he could depend on them, he resolved to begin hostilities immediately.

194
Hostilities
begun by
Cæsar.

The first design of Cæsar was to make himself master of Ariminum, a city bordering upon Cisalpine Gaul, and consequently a part of his province; but as this would be looked upon as a declaration of war, he resolved to keep his design as private as possible. At that time he himself was at Ravenna, from whence he sent a detachment towards the Rubicon, desiring the officer who commanded it to wait for him on the banks of that river. The next day he assisted at a show of gladiators, and made a great entertainment. Towards the close of the day he rose from table, desiring his guests to stay till he came back, which he said would be very soon; but, instead of returning to the company, he immediately set out for the Rubicon, having left orders to some of his most intimate friends to follow him through different roads, to avoid being observed. Having arrived at the Rubicon, which parted Cisalpine Gaul from Italy, the succeeding misfortunes of the empire occurred to his mind, and made him hesitate. Turning then to Asinius Pollio, "If I do not cross the river (said he), I am undone; and if I do cross it, how many calamities shall I by this means bring upon Rome!" Having thus spoken, he mused a few minutes; and then crying out, "The die is cast," he threw himself into the river, and crossing it, marched with all possible speed to Ariminum, which he reached and surprised before day-break. From thence, as he had but one legion with him, he dispatched orders to the formidable army he had left in Gaul to cross the mountains and join him.

The activity of Cæsar struck the opposite party with the greatest terror; and indeed not without reason, for they had been extremely negligent in making preparations against such a formidable opponent. Pompey himself, no less alarmed than the rest, left Rome with a design to retire to Capua, where he had two legions whom he had formerly draughted out of Cæsar's army. He communicated his intended flight to the senate; but at the same time acquainted them, that if any magistrate or senator refused to follow him, he should be treated as a friend to Cæsar and an enemy to his country. In the mean time Cæsar, having raised new troops in Cisalpine Gaul, sent Marc Antony with a detachment to seize Arretium, and some other officers to secure Pisaurum and Fanum, while he himself marched at the head of the thirteenth legion to Auximum, which opened its gates to him. From Auximum he advanced into Picenum, where he was joined by the twelfth legion from Transalpine Gaul. As Picenum readily submitted to him, he led his forces against Corfinium, the capital of

195
Takes several towns.

the Peligni, which Domitus Ahenobarbus defended with thirty cohorts. But Cæsar no sooner invested it, than the garrison betrayed their commander, and delivered him up with many senators, who had taken refuge in the place, to Cæsar, who granted them their lives and liberty. Domitius, fearing the resentment of the conqueror, had ordered one of his slaves, whom he used as a physician, to give him a dose of poison. When he came to experience the humanity of the conqueror, he lamented his misfortune, and blamed the hastiness of his own resolution. But his physician, who had only given him a sleeping draught, comforted him, and received his liberty as a reward for his affection.

Pompey, thinking himself no longer safe at Capua after the reduction of Corfinium, retired to Brundisium, with a design to carry the war into the east, where all the governors were his creatures. Cæsar followed him close; and arriving with his army before Brundisium, invested the place on the land-side, and undertook to shut up the port by a staccado of his own invention. But, before the work was completed, the fleet which had conveyed the two consuls with thirty cohorts to Dyrrhachium being returned, Pompey resolved to make his escape, which he conducted with all the experience and dexterity of a great officer. He kept his departure very secret; but, at the same time, made all necessary preparations for the facilitating of it. In the first place, he walled up the gates, then dug deep and wide ditches cross all the streets, except only those two that led to the port; in the ditches he planted sharp pointed stakes, covering them with hurdles and earth. After these precautions, he gave express orders that all the citizens should keep within doors, lest they should betray his design to the enemy; and then, in the space of three days, embarked all his troops, except the light-armed infantry, whom he had placed on the walls; and these likewise, on a signal given, abandoning their posts, repaired with great expedition to the ships. Cæsar, perceiving the walls unguarded, ordered his men to scale them, and make what haste they could after the enemy. In the heat of the pursuit, they would have fallen into the ditches which Pompey had prepared for them, had not the Brundisians warned them of the danger, and, by many windings and turnings, led them to the haven, where they found all the fleet under sail, except two vessels, which had run aground in going out of the harbour. These Cæsar took, made the soldiers on board prisoners, and brought them ashore.

Cæsar, seeing himself, by the flight of his rival, master of all Italy from the Alps to the sea, was desirous to follow and attack him before he was joined by the supplies which he expected from Asia. But being destitute of shipping, he resolved to go first to Rome, and settle some sort of government there; and then pass into Spain, to drive from thence Pompey's troops, who had taken possession of that great continent, under the command of Afranius and Petreius. Before he left Brundisium, he sent Scribonius Curio with three legions into Sicily, and ordered Q. Valerius, one of his lieutenants, to get together what ships he could, and cross over with one legion into Sardinia. Cato, who commanded in Sicily, upon the first news of Curio's landing there, abandoned the island, and retired to the camp of the consuls at Dyrrhachium; and Q. Valerius no sooner appeared with his small fleet off Sardinia,

196
Besieges
Pompey,
who escapes
by a stratagem.

than

Rome.

than the Caralitini, now the inhabitants of Cagliari, drove out Aurelius Cotta, who commanded there for the senate, and put Cæsar's lieutenant in possession both of their city and island.

197
Cæsar goes
to Rome.

In the mean time the general himself advanced towards Rome; and on his march wrote to all the senators then in Italy, desiring them to repair to the capital, and assist him with their counsel. Above all, he was desirous to see Cicero; but could not prevail upon him to return to Rome. As Cæsar drew near the capital, he quartered his troops in the neighbouring municipia; and then advancing to the city, out of a pretended respect to the ancient customs, he took up his quarters in the suburbs, whether the whole city crowded to see the famous conqueror of Gaul, who had been absent near ten years. And now such of the tribunes of the people as had fled to him for refuge reassumed their functions, mounted the rostra, and endeavoured by their speeches to reconcile the people to the head of their party. Marc Antony particularly, and Cassius Longinus, two of Cæsar's most zealous partisans, moved that the senate should meet in the suburbs, that the general might give them an account of his conduct. Accordingly, such of the senators as were at Rome assembled; when Cæsar made a speech in justification of all his proceedings, and concluded his harangue with proposing a deputation to Pompey, with offers of an accommodation in an amicable manner. He even desired the conscript fathers, to whom in appearance he paid great deference, to nominate some of their venerable body to carry proposals of peace to the consuls, and the general of the consular army; but none of the senators would take upon him that commission. He then began to think of providing himself with the necessary sums for carrying on the war, and had recourse to the public treasury. But Metellus, one of the tribunes, opposed him; alleging a law forbidding any one to open the treasury, but in the presence and with the consent of the consuls. Cæsar, however, without regarding the tribune, went directly to the temple of Saturn, where the public money was kept. But the keys of the treasury having been carried away by the consul Lentulus, he ordered the doors to be broken open. This Metellus opposed; but Cæsar, in a passion, laying his hand on his sword, threatened to kill him if he gave him any farther disturbance; which so terrified Metellus, that he withdrew. Cæsar took out of the treasury, which was ever after at his command, an immense sum; some say, 300,000 pounds weight of gold. With this supply of money he raised troops all over Italy, and sent governors into all the provinces subject to the republic.

198
Supplies
himself
with money
from
the public
treasury.

Cæsar now made Marc Antony commander in chief of the armies in Italy, sent his brother C. Antonius to govern Illyricum, assigned Cisalpine Gaul to Licinius Crassus, appointed M. Æmilius Lepidus governor of the capital; and having got together some ships to cruise in the Adriatic and Mediterranean seas, he gave the command of one of his fleets to P. Cornelius Dolabella, and of the other to young Hortensius, the son of the famous orator. As Pompey had sent governors into the same provinces, by this means a general war was kindled in almost all the parts of the known world. However, Cæsar would not trust any of his lieutenants with the conduct of the war in Spain, which was Pompey's favourite province, but took it upon himself; and

having settled his affairs in great haste at Rome, returned to Ariminum, assembled his legions there, and passing the Alps, entered Transalpine Gaul. There he was informed that the inhabitants of Marseilles had resolved to refuse him entrance into their city; and that L. Domitius Ahenobarbus, whom he had generously pardoned and set at liberty after the reduction of Corfinium, had set sail for Marseilles with seven galleys, having on board a great number of his clients and slaves, with a design to raise the city in favour of Pompey. Cæsar, thinking it dangerous to let the enemy take possession of such an important place, sent for the 15 chief magistrates of the city, and advised them not to begin a war with him, but rather follow the example of Italy, and submit. The magistrates returned to the city, and soon after informed him that they were to stand neuter; but in the mean time Domitius arriving with his small squadron, was received into the city, and declared general of all their forces. Hereupon Cæsar immediately invested the town with three legions, and ordered twelve galleys to be built at Arelas, now Arles, in order to block up the port. But as the siege was like to detain him too long, he left C. Trebonius to carry it on, and D. Brutus to command the fleet, while he continued his march into Spain, where he began the war with all the valour, ability, and success of a great general. Pompey had three generals in this continent, which was divided into two Roman provinces. Varro commanded in Farther Spain; and Petreius and Afranius, with equal power, and two considerable armies, in Hither Spain. Cæsar, while he was yet at Marseilles, sent Q. Fabius, one of his lieutenants, with three legions, to take possession of the passes of the Pyrenees, which Afranius had seized. Fabius executed his commission with great bravery, entered Spain, and left the way open for Cæsar, who quickly followed him. As soon as he had crossed the mountains, he sent out scouts to observe the situation of the enemy; by whom he was informed, that Afranius and Petreius having joined their forces, consisting of five legions, 20 cohorts of the natives, and 5000 horse, were advantageously posted on an hill of an easy ascent in the neighbourhood of Ilerda, now Lerida, in Catalonia. Upon this advice Cæsar advanced within sight of the enemy, and encamped in a plain between the Sicoris and Cinga, now the Segre and Cinca. Be-

Rome.

199
Is reduced
to great
distress in
Spain.

tween the eminence on which Afranius had posted himself, and the city of Ilerda, was a small plain, and in the middle of it a rising ground, which Cæsar attempted to seize, in order to cut off by that means the communication between the enemy's camp and the city, from whence they had all their provisions. This occasioned a sharp dispute between three of Cæsar's legions and an equal number of the enemy, which lasted five hours with equal success, both parties claiming the victory. But after all, Afranius's men, who had first seized the post, maintained themselves in possession of it in spite of Cæsar's utmost efforts. Two days after this battle, continual rains, with the melting of the snow on the mountains, so swelled the two rivers between which Cæsar was encamped, that they overflowed, broke down his bridges, and laid under water the neighbouring country to a great distance. This cut off the communication between his camp and the cities that had declared for him; and reduced him to such straits, that his army was ready to die for famine, wheat being sold in his

Rome. camp at 50 Roman denarii *per* bushel, that is, 1 l. 12 s. 1½ d. sterling. He tried to rebuild his bridges, but in vain; the violence of the stream rendering all his endeavours fruitless.

200
Overcomes
his difficul-
ties, and re-
duces all
Spain.

Upon the news of Cæsar's distress, Pompey's party at Rome began to take courage. Several persons of distinction went to congratulate Afranius's wife on the success of her husband's arms in Spain. Many of the senators who had hitherto stood neuter, hastened to Pompey's camp, taking it for granted that Cæsar was reduced to the last extremity, and all hopes of his party lost. Of this number was Cicero; who, without any regard to the remonstrances of Atticus, or the letters Cæsar himself wrote to him, desiring him to join neither party, he left Italy, and landed at Dyrrhachium, where Pompey received him with great marks of joy and friendship. But the joy of Pompey's party was not long-lived. For Cæsar, after having attempted several times in vain to rebuild his bridges, caused boats to be made with all possible expedition; and while the enemy were diverted by endeavouring to intercept the succours that were sent him from Gaul, he laid hold of that opportunity to convey his boats in the night on carriages 22 miles from his camp; where with wonderful quickness a great detachment passed the Sicoris, and encamping on the opposite bank unknown to the enemy, built a bridge in two days, opened a communication with the neighbouring country, received the supplies from Gaul, and relieved the wants of his soldiers. Cæsar being thus delivered from danger, pursued the armies of Afranius and Petreius with such superior address and conduct, that he forced them to submit without coming to a battle, and by that means became master of all Hither Spain. The two generals disbanded their troops, sent them out of the province, and returned to Italy, after having solemnly promised never to assemble forces again, or make war upon Cæsar. Upon the news of the reduction of Hither Spain, the Spaniards in Farther Spain, and one Roman legion, deserted from Varro, Pompey's governor in that province, which obliged him to surrender his other legion and all his money.

201
Returns to
Rome, and
is created
dictator.

Cæsar having thus reduced all Spain in a few months, appointed Cassius Longinus to govern the two provinces with four legions, and then returned to Marseilles; which city was just upon the point of surrendering after a most vigorous resistance. Though the inhabitants had by their late treachery deserved a severe punishment, yet he granted them their lives and liberty; but stripped their arsenals of arms, and obliged them to deliver up all their ships. From Marseilles Cæsar marched into Cisalpine Gaul; and from thence hastened to Rome, where he laid the foundation of his future grandeur. He found the city in a very different state from that in which he had left it. Most of the senators and magistrates were fled to Pompey at Dyrrhachium. However, there were still prætors there; and among them M. Æmilius Lepidus, who was afterwards one of the triumvirs with Octavius and Marc Antony. The prætor, to ingratiate himself with Cæsar, nominated him dictator of his own authority, and against the inclination of the senate. Cæsar accepted the new dignity; but neither abused his power, as Sylla had done, nor retained it so long. During the 11 days of his dictatorship, he governed with great moderation, and gained

Rome. the affections both of the people and the patricians. He recalled the exiles, granted the rights and privileges of Roman citizens to all the Gauls beyond the Po, and, as pontifex maximus, filled up the vacancies of the sacerdotal colleges with his own friends. Though it was expected that he would have absolutely cancelled all debts contracted since the beginning of the troubles, he only reduced the interest to one-fourth. But the chief use he made of his dictatorship was to preside at the election of consuls for the next year, when he got himself, and Servilius Isauricus, one of his most zealous partisans, promoted to that dignity.

And now being resolved to follow Pompey, and carry the war into the east, he set out for Brundisium, whither he had ordered 12 legions to repair with all possible expedition. But on his arrival he found only five there. The rest, being afraid of the dangers of the sea, and unwilling to engage in a new war, had marched leisurely, complaining of their general for allowing them no respite, but hurrying them continually from one country to another. However, Cæsar did not wait for them, but set sail with only five legions and 600 horse in the beginning of January. While the rest were waiting at Brundisium for ships to transport them over into Epirus, Cæsar arrived safe with his five legions in Chaonia, the northern part of Epirus, near the Ceraunian mountains. There he landed his troops, and sent the ships back to Brundisium to bring over the legions that were left behind. The war he was now entering upon was the most difficult he had yet undertaken. Pompey had for a whole year been assembling troops from all the eastern countries. When he left Italy, he had only five legions; but since his arrival at Dyrrhachium he had been reinforced with one from Sicily, another from Crete, and two from Syria. Three thousand archers, six cohorts of slingers, and seven thousand horse, had been sent him by princes in alliance with Rome. All the free cities of Asia had reinforced his army with their best troops; nay, if we give credit to an historical poet, succours were brought him from the Indus and the Ganges to the east, and from Arabia and Ethiopia to the south; at least it is certain, that Greece, Asia Minor, Syria, Palestine, Egypt, and all the nations from the Mediterranean to the Euphrates, took up arms in his favour. He had almost all the Roman knights, that is, the flower of the young nobility, in his squadrons, and his legions consisted mostly of veterans inured to dangers and the toils of war. Pompey himself was a general of great experience and address; and had under him some of the best commanders of the republic, who had formerly conducted armies themselves. As for his navy, he had above 500 ships of war, besides a far greater number of small vessels, which were continually cruising on the coasts, and intercepted such ships as carried arms or provisions to the enemy. He had likewise with him above 200 senators, who formed a more numerous senate than that at Rome. Cornelius Lentulus and Claudius Marcellus, the last year's consuls, presided in it; but under the direction of Pompey their protector, who ordered them to assemble at Thessalonica, where he built a stately hall for that purpose. There, in one of their assemblies, at the motion of Cato, it was decreed, that no Roman citizen should be put to death but in battle, and that no city subject to the republic should be sacked. At the same time the

202
Follows
Pompey
into the
east.

Rome.

conscript fathers assembled at Thessalonica decreed, that they alone represented the Roman senate, and that those who resided at Rome were encouragers of tyranny, and friends to the tyrant. And indeed, as the flower of the nobility was with Pompey, and the most virtuous men in the republic had taken refuge in his camp, he was generally looked upon as the only hope and support of the public liberty. Hence many persons of eminent probity, who had hitherto stood neuter, flocked to him from all parts. Among these were young Brutus, who afterwards conspired against Cæsar, Tadius Sextius, and Labienus. Brutus, whose father had been put to death in Galatia by Pompey's order, had never spoken to him, or so much as saluted him since that time: but as he now looked upon him as the defender of the public liberty, he joined him, sacrificing therein his private resentment to the interest of the public. Pompey received him with great joy, and was willing to confer upon him some command; but he declined the offer. Tadius Sextius, though extremely old and lame, yet left Rome, and went as far as Macedonia to join Pompey there. Labienus likewise forsook his old benefactor, under whom he had served during the whole course of the Gaulish war, and went over to his rival, though Cæsar had appointed him commander in chief of all the forces on the other side the Alps. In short, Pompey's party grew into such reputation, that his cause was generally called the *good cause*, while Cæsar's adherents were looked upon as enemies to their country, and abettors of tyranny.

203
Makes proposals of accommodation, which are rejected.

As soon as Cæsar landed, he marched directly to Oricum, the nearest city in Epirus, which was taken without opposition. The like success attended him at Apollonia, which was in no condition to stand a siege; and these two conquests opened a way to Dyrrhachium, where Pompey had his magazines of arms and provisions. This success, however, was interrupted by the news that the fleet which he had sent back to Brundisium to transport the rest of his troops had been attacked by Bibulus, one of Pompey's admirals, who had taken 30, and inhumanly burnt them with the seamen on board. This gave Cæsar great uneasiness, especially as he heard that Bibulus, with 110 ships of war, had taken possession of all the harbours between Salonium and Oricum; so that the legions at Brundisium could not venture to cross the sea without great danger of falling into the enemy's hands. By this Cæsar was so much embarrassed, that he made proposals of accommodation upon very moderate terms; being no other than that both Pompey and he should disband their armies within three days, renew their former friendship with solemn oaths, and return together to Italy. These proposals were sent by Vibullius Rufus, an intimate friend of Pompey, whom Cæsar had twice taken prisoner. Pompey, however, probably elated with his late good fortune, answered that he would not hearken to any terms, lest it should be said that he owed his life and return to Italy to Cæsar's favour. However, the latter again sent one Vatinius to confer with Pompey about a treaty of peace. Labienus was appointed to receive the proposals; but while they were conferring together, a party of Pompey's men coming up to them, discharged their darts at Vatinius and those who attended him. Some of the guards were wounded, and Vatinius narrowly escaped with his life.

Rome.

In the mean time Cæsar advanced towards Dyrrhachium, in hopes of surprising that important place; but Pompey unexpectedly appearing, he halted on the other side of the river Apus, where he intrenched himself, as having but a small number of troops in comparison of the formidable army which attended Pompey. The latter, however, notwithstanding his superiority, durst not cross the river in Cæsar's sight; so that the two armies continued for some time quiet in their respective camps. Cæsar wrote letter after letter to Marc Antony, who commanded the legions he had left in Italy, to come to his assistance; but receiving no answer, Cæsar disguised himself in the habit of a slave, and with all imaginable secrecy went on board a fisherman's bark, with a design to go over to Brundisium, though the enemy's fleet was cruising on the coasts both of Greece and Italy. This design, however, miscarried, by reason of the boat being put back by contrary winds; and thus Cæsar was restored to his soldiers, who had been very uneasy at his absence. He was no sooner landed than he dispatched Posthumus, one of his lieutenants, with most pressing orders to Marc Antony, Gabinius, and Calenus, to bring the troops to him at all adventures. Gabinius, unwilling to expose all the hopes of his general to the hazards of the sea, thought it safer to march a great way about by Illyricum, and therefore engaged all the legionaries he could to follow him by land. But the Illyrians, who had, unknown to him, declared for Pompey, fell unexpectedly upon him and killed him and his men, not one escaping. Marc Antony and Calenus, who went by sea, were in the greatest danger from one of Pompey's admirals; but had the good luck to bring their troops safe to shore at Nymphæum, in the neighbourhood of Apollonia. As soon as it was known that Antony was landed, Pompey marched to prevent his joining Cæsar. On the other hand, Cæsar instantly decamped, and hastening to the relief of his lieutenant, joined him before Pompey came up. Then Pompey, not caring to engage them when united, retired to an advantageous post in the neighbourhood of Dyrrhachium, known by the name of *Asparagium*, and there encamped. Cæsar having thus at length got all his troops together, resolved to finish the war by one general action, and determine the fate of the world, either by his own death or by that of his rival. To this end he offered Pompey battle, and kept his army a great while drawn up in sight of the enemy. But Pompey declining an engagement, he decamped, and turned towards Dyrrhachium, as if he designed to surprise it, hoping by this means to draw Pompey into the plain. But Pompey, looking upon the taking of Dyrrhachium as a chimerical project, followed Cæsar at some distance, and letting him draw near to the city, encamped on a hill called *Petra*, which commanded the sea, whence he could be supplied with provisions from Greece and Asia, while Cæsar was forced to bring corn by land from Epirus, at a vast expence, and through many dangers.

This inconvenience put Cæsar upon a new design, which was to surround an army far more numerous than his own, and, by shutting them up within a narrow tract of ground, distress them as much for want of forage as his troops were distressed for want of corn. Pursuant to this design, he drew a line of circumvallation from the sea quite round Pompey's camp, and kept Pompey in him his camp.

204

Besieges

Rome.

Rome.

him so closely blocked up, that though his men were plentifully supplied with provisions by sea, yet the horses of his army began soon to die in great numbers for want of forage. Cæsar's men, though in the utmost distress for want of corn, yet bore all with incredible cheerfulness; protesting, that they would rather live upon the bark of trees than suffer Pompey to escape, now they had him in their power. Cæsar tells us, that in this extremity such of the army as had been in Sardinia found out the way of making bread of a certain root called *clara*, which they steeped in milk; and that when the enemy insulted them on account of the starving condition which they were in, they threw several of these loaves among them, to put them out of all hopes of subduing them by famine. "So long as the earth produces such roots (said they), we will not let Pompey escape." At length Pompey, alarmed at the distempers which began to prevail in his army, made several attempts to break through the barriers that inclosed him, but was always repulsed with loss. At length, being reduced to the utmost extremity for want of forage, he resolved at all events to force the enemy's lines and escape. With the assistance, therefore, and by the advice of two deserters, he embarked his archers, slingers, and light-armed infantry, and marching himself by land at the head of 60 cohorts, went to attack that part of Cæsar's lines which was next to the sea, and not yet quite finished. He set out from his camp in the dead of the night, and arriving at the post he designed to force by break of day, he began the attack by sea and land at the same time. The ninth legion, which defended that part of the lines, made for some time a vigorous resistance; but being attacked in the rear by Pompey's men, who came by sea, and landed between Cæsar's two lines, they fled with such precipitation, that the succours Marcellinus sent them from a neighbouring post could not stop them. The ensign who carried the eagle at the head of the routed legion was mortally wounded; but nevertheless, before he died, had presence of mind enough to consign the eagle to the cavalry of the party, desiring them to deliver it to Cæsar. Pompey's men pursued the fugitives, and made such a slaughter of them, that all the centurions of the first cohort were cut off except one. And now Pompey's army broke in like a torrent upon the posts Cæsar had fortified, and were advancing to attack Marcellinus, who guarded a neighbouring fort; but Marc Antony coming very seasonably to his relief with 12 cohorts, they thought it advisable to retire.

205
Is driven
from some
of his posts.

206
Cæsar de-
feated and
in great
danger.

Soon after Cæsar himself arrived with a strong reinforcement, and posted himself on the shore, in order to prevent such attempts for the future. From this post he observed an old camp which he had made within the place where Pompey was inclosed, but afterwards abandoned. Upon his quitting it, Pompey had taken possession of it, and left a legion to guard it. This post Cæsar resolved to reduce, hoping to repair the loss he had sustained on this unfortunate day, by taking the legion which Pompey had posted there. Accordingly, he advanced secretly at the head of 33 cohorts in two lines: and arriving at the old camp before Pompey could have notice of his march, attacked it with great vigour, forced the first intrenchment, notwithstanding the brave resistance of Titus Pulcio, and penetrated to the second, whither the legion had retired. But here

his fortune changed on a sudden. His right wing, in looking for an entrance into the camp, marched along the outside of a trench which Cæsar had formerly carried on from the left angle of his camp, about 400 paces, to a neighbouring river. This trench they mistook for the rampart of the camp; and being led away by that mistake from their left wing, they were soon after prevented from rejoining it by the arrival of Pompey, who came up at the head of a legion and a large body of horse. Then the legion which Cæsar had attacked taking courage, made a brisk sally, drove his men back to the first intrenchment which they had seized, and there put them in great disorder while they were attempting to pass the ditch. Pompey, in the mean time, falling upon them with his cavalry in flank, completed their defeat; and then flying to the enemy's right wing, which had passed the trench mentioned above, and was shut up between that and the ramparts of the old camp, made a most dreadful slaughter of them. The trench was filled with dead bodies, many falling into it in that disorder, and others passing over them and pressing them to death.

In this distress, Cæsar did all he could to stop the flight of his legionaries, but to no purpose: the standard-bearers themselves threw down the Roman eagles when Cæsar endeavoured to stop them, and left them in the hands of the enemy, who on this occasion took 32 standards; a disgrace which Cæsar had never suffered before. He was himself in no small danger of falling by the hand of one of his own men, whom he took hold of when flying, bidding him stand and face about; but the man, apprehensive of the danger he was in, drew his sword, and would have killed him, had not one of his guards prevented the blow by cutting off his arm. Cæsar lost on this occasion 960 of his foot, 400 of his horse, 5 tribunes, and 32 centurions.

This loss and disgrace greatly mortified Cæsar, but did not discourage him. After he had by his lenity and eloquent speeches recovered the spirit of his troops, he decamped, and retired in good order to Apollonia, where he paid the army, and left his sick and wounded. From thence he marched into Macedon, where Scipio Metellus, Pompey's father-in-law, was encamped. He hoped either to draw his rival into some plain, or to overpower Scipio if not assisted. He met with great difficulties on his march, the countries through which he passed refusing to supply his army with provisions; to such a degree was his reputation sunk since his last defeat! On his entering Thessaly he was met by Domitius, one of his lieutenants, whom he had sent with three legions to reduce Epirus. Having now got all his forces together, he marched directly to Gomphi, the first town of Thessaly, which had been formerly in his interest, but now declared against him. Whereupon he attacked it with so much vigour, that though the garrison was very numerous, and the walls were of an uncommon height, he made himself master of it in a few hours. From hence he marched to Metropolis, another considerable town of Thessaly, which immediately surrendered; as did all the other cities of the country, except Larissa, of which Scipio had made himself master.

On the other hand, Pompey being continually importuned by the senators and officers of his army, left his camp at Dyrrhachium, and followed Cæsar, firmly resolved

207
He retrieve
his affairs.

Rome.

resolved not to give him battle, but rather to distress him by keeping close at his heels, straitening his quarters, and cutting off his convoys. As he had frequent opportunities of coming to an engagement, but always declined it, his friends and subalterns began to put ill constructions on his dilatoriness to his face.

208

Pompey resolves to come to an engagement.

These, together with the complaints of his soldiers, made him at length resolve to venture a general action. With this design he marched into a large plain near the cities of Pharfalia and Thebes; which latter was also called *Philippi*, from Philip king of Macedon, and the father of Perseus, who, having reduced the Thebans, placed a colony of Macedonians in their city. This plain was watered by the Enipeus, and surrounded on all sides by high mountains; and Pompey, who was still averse from venturing an engagement, pitched his camp on the declivity of a steep mountain, in a place altogether inaccessible. There he was joined by Scipio his father-in-law, at the head of the legions which he had brought with him from Syria and Cilicia. But notwithstanding this reinforcement, he continued irresolute, and unwilling to put all to the issue of a single action; being still convinced of the wisdom of his maxim, that it was better to destroy the enemy by fatigues and want, than to engage an army of brave veterans, who were in a manner reduced to despair. As he put off from day to day, under various pretences, descending into the plain where Cæsar was encamped, his officers forced him to call a council of war, when all to a man were for venturing a general action the very next day. Thus was Pompey obliged to sacrifice his own judgment to the blind ardour of the multitude; and the necessary measures were taken for a general engagement.

209

Is totally defeated.

† See Pharfalia.

The event of this battle was in the highest degree fortunate for Cæsar†; who resolved to pursue his advantage, and follow Pompey to whatever country he should retire. Hearing, therefore, of his being at Amphipolis, he sent off his troops before him, and then embarked on board a little frigate in order to cross the Hellespont; but in the middle of the strait, he fell in with one of Pompey's commanders, at the head of ten ships of war. Cæsar, noway terrified at the superiority of his force, bore up to him, and commanded him to submit. The other instantly obeyed, awed by the terror of Cæsar's name, and surrendered himself and his fleet at discretion.

From thence he continued his voyage to Ephesus, then to Rhodes; and being informed that Pompey had been there before him, he made no doubt but that he was fled to Egypt; wherefore, losing no time, he set sail for that kingdom, and arrived at Alexandria with about 4000 men; a very inconsiderable force to keep such a powerful kingdom under subjection. But he was now grown so secure in his good fortune, that he expected to find obedience everywhere. Upon his landing, the first accounts he received were of Pompey's miserable end, who had been assassinated by orders of

210

Is murdered in Egypt.

the treacherous king as soon as he went on shore; and soon after one of the murderers came with his head and ring as a most grateful present to the conqueror. But Cæsar turned away from it with horror, and shortly after ordered a magnificent tomb to be built to his memory on the spot where he was murdered; and a temple near the place, to Nemesis, who was the goddess

that punished those that were cruel to men in adversity.

Rome.

It should seem that the Egyptians by this time had some hopes of breaking off all alliance with the Romans; which they considered, as in fact it was, but a specious subjection. They first began to take offence at Cæsar's carrying the ensigns of Roman power before him as he entered the city. Photinus, the eunuch, also treated him with disrespect, and even attempted his life. Cæsar, however, concealed his resentment till he had a force sufficient to punish his treachery; and sending privately for the legions which had been formerly enrolled for Pompey's service, as being the nearest to Egypt, he in the mean time pretended to repose an entire confidence in the king's minister. However, he soon changed his manner when he found himself in no danger from his attempts; and declared, that, as being a Roman consul, it was his duty to settle the succession to the Egyptian crown.

211

The Egyptians quarrel with Cæsar.

There were at that time two pretenders to the crown of Egypt: Ptolemy, the acknowledged king; and the celebrated Cleopatra his sister; who, by the custom of the country, was also his wife, and, by their father's will, shared jointly in the succession. However, not being contented with a bare participation of power, she aimed at governing alone; but being opposed in her views by the Roman senate, who confirmed her brother's title to the crown, she was banished into Syria with Arsinoë her younger sister.

Cæsar, however, gave her new hopes of obtaining the kingdom, and sent both for her and her brother to plead their cause before him. Photinus, the young king's guardian, who had long borne the most inveterate hatred as well to Cæsar as to Cleopatra, disdained this proposal, and backed his refusal by sending an army of 20,000 men to besiege him in Alexandria. Cæsar bravely repulsed the enemy for some time; but finding the city of too great extent to be defended by so small an army as he then had with him, he retired to the palace, which commanded the harbour, where he purposed to make a stand. Achilles, who commanded the Egyptians, attacked him there with great vigour, and still aimed at making himself master of the fleet that lay before the palace. Cæsar, however, too well knew the importance of those ships in the hands of an enemy; and therefore burnt them all in spite of every effort to prevent it. He next possessed himself of the isle of Pharos, which was the key to the Alexandrian port, by which he was enabled to receive the supplies sent him from all sides; and in this situation he determined to withstand the united force of all the Egyptians.

212

And besieges him in Alexandria.

In the mean time, Cleopatra having heard of the present turn in her favour, resolved to depend rather on Cæsar's favour for gaining the government than her own forces. She had, in fact, assembled an army in Syria to support her claims; but now judged it the wisest way to rely entirely on the decision of her self-elected judge. But no arts, as she justly conceived, were so likely to influence Cæsar, as the charms of her person. The difficulty was how to get at Cæsar, as her enemies were in possession of all the avenues that led to the palace. For this purpose, she went on board a small vessel, and in the evening landed near the palace; where, being wrapped up in a coverlet, she was

carried

Rome.

carried by one Aspolodorus into the very chamber of Cæsar. Her address at first pleased him; but her caresses, which were carried beyond the bounds of innocence, entirely brought him over to second her claims.

While Cleopatra was thus employed in forwarding her own views, her sister Arsinoë was also strenuously engaged in the camp in pursuing a separate interest. She had found means, by the assistance of one Ganymede her confident, to make a large division in the Egyptian army in her favour; and soon after caused Achilles to be murdered, and Ganymede to take the command in his stead, and to carry on the siege with greater vigour than before. Ganymede's principal effort was by letting in the sea upon those canals which supplied the palace with fresh water; but this inconvenience Cæsar remedied by digging a great number of wells. His next endeavour was to prevent the junction of Cæsar's 24th legion, which he twice attempted in vain. He soon after made himself master of a bridge which joined the isle of Pharos to the continent, from which post Cæsar was resolved to dislodge him. In the heat of action, some mariners came and joined the combatants; but being seized with a panic, instantly fled, and spread a general terror through the army. All Cæsar's endeavours to rally his forces were in vain, the confusion was past remedy, and numbers were drowned or put to the sword in attempting to escape; on which, seeing the irremediable disorder of his troops, he retired to a ship in order to get to the palace that was just opposite. However, he was no sooner on board than great crowds entered at the same time with him; upon which, apprehensive of the ship's sinking, he jumped into the sea, and swam 200 paces to the fleet that lay before the palace.

The Alexandrians, finding their efforts to take the palace ineffectual, endeavoured at least to get their king out of Cæsar's power, as he had seized upon his person in the beginning of their disputes. For this purpose they made use of their customary arts of dissimulation, professing the utmost desire for peace, and only wanting the presence of their lawful prince to give a sanction to the treaty. Cæsar, who was sensible of their perfidy, nevertheless concealed his suspicions, and gave them their king, as he was under no apprehensions from the abilities of a boy. Ptolemy, however, the instant he was set at liberty, instead of promoting peace, made every effort to give vigour to hostilities.

213
He is at last
relieved.

In this manner Cæsar was hemmed in for some time: but he was at last relieved from this mortifying situation by Mithridates Pergamenus, one of his most faithful partizans; who, collecting a numerous army in Syria, marched into Egypt, took the city of Pelusium, repulsed the Egyptian army with loss, and at last, joining with Cæsar, attacked their camp, and made a great slaughter of the Egyptians. Ptolemy himself, attempting to escape on board a vessel that was sailing down the river, was drowned by the ship's sinking; and Cæsar thus became master of all Egypt without any further opposition. He therefore appointed, that Cleopatra, with her younger brother, who was then but an infant, should jointly govern, according to the intent of their father's will; and drove out Arsinoë with Ganymede into banishment.

Cæsar now for a while seemed to relax from the usual activity of his conduct, captivated with the charms

of Cleopatra. Instead of quitting Egypt to go and quell the remains of Pompey's party, he abandoned himself to his pleasures, passing whole nights in feasts with the young queen. He even resolved to attend her up the Nile into Ethiopia; but the brave veterans, who had long followed his fortune, boldly reprehended his conduct, and refused to be partners in so infamous an expedition. Thus, at length, roused from his lethargy, he left Cleopatra, by whom he had a son who was afterwards named *Cæsario*, in order to oppose Pharnaces the king of Pontus, who had now made some inroads upon the dominions of Rome. Here he was attended with the greatest success, as we have related under the article *PONTUS*; and having settled affairs in this part of the empire, as well as time would permit, he embarked for Italy, where he arrived sooner than his enemies could expect, but not before his affairs there absolutely required his presence. He had been, during his absence, created consul for five years, dictator for one year, and tribune of the people for life. But Antony, who in the mean time governed in Rome for him, had filled the city with riot and debauchery, and many commotions ensued, which nothing but the arrival of Cæsar could appease. However, by his moderation and humanity, he soon restored tranquillity to the city, scarce making any distinction between those of his own and the opposite party. Thus having, by gentle means, restored his authority at home, he prepared to march into Africa, where Pompey's party had found time to rally under Scipio and Cato, assisted by Juba king of Mauritania. But the vigour of his proceedings had like to have been retarded by a mutiny in his own army. Those veteran legions, who had hitherto conquered all that came before them, began to murmur for not having received the rewards which they had expected for their past services, and now insisted upon their discharge. However, Cæsar found means to quell the mutiny; and then, according to his usual diligence, landed with a small party in Africa, the rest of the army following soon after. After many movements and skirmishes, he resolved at last to come to a decisive battle. For this purpose he invested the city of Tapus, supposing that Scipio would attempt its relief, which turned out according to his expectation. Scipio, joining with the young king of Mauritania, advanced with his army, and encamping near Cæsar, they soon came to a general battle. Cæsar's success was as usual; the enemy received a complete and final overthrow, with little loss on his side. Juba, and Petreius his general, killed each other in despair; Scipio, attempting to escape by sea into Spain, fell in among the enemy, and was slain; so that, of all the generals of that undone party, Cato was now alone remaining.

This extraordinary man, having retired into Africa after the battle of Pharsalia, had led the wretched remains of that defeat through burning deserts and tracts infested with serpents of various malignity, and was now in the city of Utica, which he had been left to defend. Still, however, in love with even the show of Roman government, he had formed the principal citizens into a senate, and conceived a resolution of holding out the town. He accordingly assembled his senators upon this occasion, and exhorted them to stand a siege; but finding his admonitions ineffectual, he stabbed himself with his sword †. Upon his death, † See Cato.

the

Rome.

214
Arives in
Italy, and
soon after
undertakes
an expedi-
tion into
Africa.

215
Defeats the
partisans of
Pompey.

216

Cato kills
himself.

Rome. the war in Africa being completed, Cæsar returned in triumph to Rome; and, as if he had abridged all his former triumphs only to increase the splendor of this, the citizens were astonished at the magnificence of the procession, and the number of the countries he had subdued. It lasted four days: the first was for Gaul, the second for Egypt, the third for his victories in Asia, and the fourth for that over Juba in Africa. To every one of his soldiers he gave a sum equivalent to about 150*l.* of our money, double that sum to the centurions, and four times as much to the superior officers. The citizens also shared his bounty; to every one of whom he distributed 10 bushels of corn, 10 pounds of oil, and a sum of money equal to about two pounds Sterling of ours. He, after this, entertained the people at about 20,000 tables, treated them with the combat of gladiators, and filled Rome with a concourse of spectators from every part of Italy.

217
Honours
heaped up-
on him at
Rome.

The people now seemed eager only to find out new modes of homage and unusual methods of adulation for their great enslaver. He was created, by a new title, *Magister Morum*, or Master of the Morals of the People; he received the title of *Emperor*, *Father of his country*; his person was declared sacred; and, in short, upon him alone were devolved for life all the great dignities of the state. It must be owned, however, that no sovereign could make a better use of his power. He immediately began his empire by repressing vice and encouraging virtue. He communicated the power of judicature to the senators and the knights alone, and by many sumptuary laws restrained the scandalous luxuries of the rich. He proposed rewards to all such as had many children; and took the most prudent methods of repopling the city, that had been exhausted in the late commotions; and besides his other works, he greatly reformed the calendar.

Having thus restored prosperity once more to Rome, he again found himself under a necessity of going into Spain, to oppose an army which had been raised there under the two sons of Pompey and Labienus his former general. He proceeded in this expedition with his usual celerity, and arrived in Spain before the enemy thought him yet departed from Rome. Cneius and Sextus, Pompey's sons, profiting by their unhappy father's example, resolved as much as possible to protract the war; so that the first operations of the two armies were spent in sieges and fruitless attempts to surprise each other. At length Cæsar, after taking many cities from the enemy, and pursuing young Pompey with unwearied perseverance, compelled him to come to a battle upon the plains of Munda.

218
Becomes
master of
the whole
empire by
his victory
at Munda.

After a most obstinate engagement, Cæsar gained a complete victory (see *MUNDA*); and having now subdued all his enemies, he returned to Rome for the last time to receive new dignities and honours, and to enjoy an accumulation of all the great offices of the state. Still, however, he pretended to a moderation in the enjoyment of his power; he left the consuls to be named by the people; but as he possessed all the authority of the office, it from this time began to sink into contempt. He enlarged the number of senators also; but as he had previously destroyed their power, their new honours were but empty titles. He took care to pardon all who had been in arms against him, but not till he had deprived them of the power

of resistance. He even set up once more the statues of Pompey; which, however, as Cicero observed, he only did to secure his own. The rest of this extraordinary man's life was employed for the advantage of the state. He adorned the city with magnificent buildings; he rebuilt Carthage and Corinth, sending colonies to both cities; he undertook to level several mountains in Italy, to drain the Pontine marshes near Rome, and designed to cut through the Isthmus of Peloponnesus. Thus he formed mighty projects and designs beyond the limits of the longest life; but the greatest of all was his intended expedition against the Parthians, by which he designed to revenge the death of Crassus; then to pass through Hyrcania, and enter Scythia along the banks of the Caspian sea; from thence to open himself a way through the immeasurable forests of Germany into Gaul, and so return to Rome. These were the aims of ambition: but the jealousy of a few individuals put an end to them all.

219
His vast
designs.

The senate, with an adulation which marked the degeneracy of the times, continued to load Cæsar with fresh honours, and he continued with equal vanity to receive them. They called one of the months of the year after his name; they stamped money with his image; they ordered his statue to be set up in all the cities of the empire; they instituted public sacrifices on his birth-day; and talked, even in his life-time, of enrolling him in the number of their gods. Antony, at one of their public festivals, foolishly ventured to offer him a diadem; but he put it back again, refusing it several times, and receiving at every refusal loud acclamations from the people. One day, when the senate ordered him some particular honours, he neglected to rise from his seat; and from that moment is said to have been marked for destruction. It began to be rumoured that he intended to make himself king; for though in fact he already was so, the people, who had an utter aversion to the name, could not bear his assuming the title. Whether he really designed to assume that empty honour must now for ever remain a secret; but certain it is, that the unsuspecting openness of his conduct marked something like a confidence in the innocence of his intentions. When informed by those about him of the jealousies of many persons who envied his power, he was heard to say, That he had rather die once by treason, than to live continually in the apprehension of it: and to convince the world how little he had to apprehend from his enemies, he disbanded his company of Spanish guards, which facilitated the enterprise against his life.

220
A conspi-
racy form-
ed against
him.

A deep-laid conspiracy was formed against him, composed of no less than 60 senators. At the head of this conspiracy was Brutus, whose life Cæsar had spared after the battle of Pharsalia, and Cassius, who had been pardoned soon after, both prætors for the present year. Brutus made it his chief glory to have been descended from that Brutus who first gave liberty to Rome; and from a desire of following his example, broke all the ties of private friendship, and entered into a conspiracy which was to destroy his benefactor. Cassius, on the other hand, was impetuous and proud, and hated Cæsar's person still more than his cause. He had often sought an opportunity of gratifying his revenge by assassination, which took rise rather from private than public motives.

Rome.

The conspirators, to give a colour of justice to their proceedings, remitted the execution of this design to the ides of March, the day on which it was reported that Cæsar was to be offered the crown. The augurs had foretold that this day would be fatal to him; and the night preceding, he heard his wife Calphurnia lamenting in her sleep, and being awakened, she confessed to him that she dreamt of his being assassinated in her arms. These omens, in some measure, began to change his intentions of going to the senate, as he had resolved, that day; but one of the conspirators coming in, prevailed upon him to keep his resolution, telling him of the reproach which would attend his staying at home till his wife had lucky dreams, and of the preparations that were made for his appearance. As he went along to the senate, a slave, who hastened to him with information of the conspiracy, attempted to come near him, but could not for the crowd. Artemidorus, a Greek philosopher, who had discovered the whole plot, delivered to him a memorial, containing the heads of his information; but Cæsar gave it, with other papers, to one of his secretaries without reading, as was usual in things of this nature. As soon as he had taken his place in the senate, the conspirators came near him, under a pretence of saluting him; and Cimber, who was one of them, approached in a suppliant posture, pretending to sue for his brother's pardon, who was banished by his order. All the conspirators seconded him with great tenderness; and Cimber, seeming to sue with still greater submission, took hold of the bottom of his robe, holding him so as to prevent his rising. This was the signal agreed on. Casca, who was behind, stabbed him, though slightly, in the shoulder. Cæsar instantly turned round, and with the style of his tablet wounded him in the arm. However, all the conspirators were now alarmed; and inclosing him round, he received a second stab from an unknown hand in the breast, while Cassius wounded him in the face. He still defended himself with great vigour, rushing among them, and throwing down such as opposed him, till he saw Brutus among the conspirators, who, coming up, struck his dagger in his thigh. From that moment Cæsar thought no more of defending himself, but looking upon this conspirator, cried out, "And you too, Brutus!" Then covering his head, and spreading his robe before him in order to fall with greater decency, he sunk down at the base of Pompey's statue, after receiving three and twenty wounds, in the 56th year of his age, and 4th of his reign.

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He is murdered.

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Great confusion occasioned by his death.

As soon as the conspirators had dispatched Cæsar, they began to address themselves to the senate, in order to vindicate the motives of their enterprise, and to excite them to join in procuring their country's freedom; but all the senators who were not accomplices fled with such precipitation, that the lives of some of them were endangered in the throng. The people also being now alarmed, left their usual occupations, and ran tumultuously through the city; some actuated by their fears, and still more by a desire of plunder. In this state of confusion, the conspirators all retired to the capitol, and guarded its access by a body of gladiators which Brutus had in pay. It was in vain they alleged they only struck for freedom, and that they killed a tyrant who usurped the rights of mankind: the people, accustomed to luxury and ease, little regarded their profes-

sions, dreading more the dangers of poverty than of subjection.

The friends of the late dictator now began to find that this was the time for coming into greater power than before, and for satisfying their ambition under the veil of promoting justice. Of this number was Antony, whom we have already seen acting as a lieutenant under Cæsar. He was a man of moderate abilities and excessive vices; ambitious of power, but skilled in war, to which he had been trained from his youth. He was consul for this year; and resolved, with Lepidus, who was fond of commotions like himself, to seize this opportunity of assuming the sovereign power. Lepidus, therefore, took possession of the forum with a band of soldiers at his devotion; and Antony, being consul, was permitted to command them. Their first step was to possess themselves of all Cæsar's papers and money; and the next to convene the senate, in order to determine whether Cæsar had been a legal magistrate or a tyrannical usurper, and whether those who killed him merited rewards or punishments. There were many of these who had received their promotions from Cæsar, and had acquired large fortunes in consequence of his appointments: to vote him an usurper, therefore, would be to endanger their property; and yet to vote him innocent, might endanger the state. In this dilemma they seemed willing to reconcile extremes; wherefore they approved all the acts of Cæsar, and yet granted a general pardon to all the conspirators.

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The conspirators pardoned by the senate.

This decree was very far from giving Antony satisfaction, as it granted security to a number of men who were the avowed enemies of tyranny, and who would be foremost in opposing his schemes of restoring absolute power. As therefore the senate had ratified all Cæsar's acts without distinction, he formed a scheme upon this of making him rule when dead as imperiously as he had done when living. Being, as was said, possessed of Cæsar's books of accounts, he so far gained upon his secretary as to make him insert whatever he thought proper. By these means, great sums of money, which Cæsar never would have bestowed, were here distributed among the people; and every man who was averse to republican principles was here sure of finding a gratuity. He then demanded that Cæsar's funeral obsequies should be performed; which the senate now could not decently forbid, as they had never declared him a tyrant. Accordingly, the body was brought forth into the forum with the utmost solemnity; and Antony began his operations upon the passions of the people, by the prevailing motives of private interest. He first read Cæsar's will, in which he had left Octavius, his sister's grandson, his heir, permitting him to take the name of Cæsar; and three parts of his private fortune Brutus was to inherit in case of his death. The Roman people were left the gardens which he had on the other side the Tiber; and every citizen, in particular, was to receive 300 sesterces. This last bequest not a little contributed to increase the people's affection for their late dictator; they now began to consider Cæsar as a father, who, not satisfied with doing them the greatest good while living, thought of benefiting them even after his death. As Antony continued reading, the multitude began to be moved, and sighs and lamentations were heard from every quarter. Antony, seeing the audience favourable

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Antony inflames the people.

avourable to his designs, now began to address the assembly in a more pathetic strain: he presented before them Cæsar's bloody robe, and, as he unfolded it, took care they should observe the number of stabs in it: he then displayed an image, which to them appeared the body of Cæsar, all covered with wounds. The people could now no longer contain their indignation; they unanimously cried out for revenge; all the old soldiers who had fought under him, burnt, with his body, their coronets, and other marks of conquest with which he had honoured them. A great number of the first matrons in the city threw in their ornaments also; till at length, rage succeeding to sorrow, the multitude ran with flaming brands from the pile to set fire to the conspirators houses. In this rage of resentment, meeting with one Cinna, whom they mistook for another of the same name who was in the conspiracy, they tore him in pieces. The conspirators themselves, however, being well guarded, repulsed the multitude with no great trouble; but perceiving the rage of the people, they thought it safest to retire from the city. Divine honours were then granted him; and an altar was erected on the place where his body was burnt, where afterwards was erected a column inscribed, *To the father of his country.*

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He endeavours to engross the power entirely into his own hand.

In the mean time, Antony, who had excited this flame, resolved to make the best of the occasion. Having gained the people by his zeal in Cæsar's cause, he next endeavoured to bring over the senate, by a seeming concern for the freedom of the state. He therefore proposed to recal Sextus, Pompey's only remaining son, who had concealed himself in Spain since the death of his father: and to grant him the command of all the fleets of the empire. His next step to their confidence, was the quelling a sedition of the people, who rose to revenge the death of Cæsar, and putting their leader Amathus to death, who pretended to be the son of Marius. He after this pretended to dread the resentment of the multitude, and demanded a guard for the security of his person. The senate granted his request; and, under this pretext, he drew round him a body of 6000 resolute men, attached to his interest, and ready to execute his commands. Thus he continued every day making rapid strides to absolute power; all the authority of government was lodged in his hands and those of his two brothers alone, who shared among them the consular, tribunitian, and prætorian power. His vows to revenge Cæsar's death seemed either postponed, or totally forgotten; and his only aim seemed to be to confirm himself in that power which he had thus artfully acquired. But an obstacle to his ambition seemed to arise from a quarter on which he least expected it. This was from Octavius, or Octavianus Cæsar, afterwards called *Augustus*, who was the grand-nephew, and adopted son of Cæsar, and was at Apollonia when his kinsman was slain. He was then about 18 years old, and had been sent to that city to improve himself in the study of Grecian literature. Upon the news of Cæsar's death, notwithstanding the earnest dissuasions of all his friends, he resolved to return to Rome, to claim the inheritance, and revenge the death of his uncle. From the former professions of Antony, he expected to find him a warm assistant to his aims; and he doubted not, by his concurrence, to take signal vengeance on all who had a hand in the con-

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Is opposed by Octavius.

spiracy. However, he was greatly disappointed. Antony, whose projects were all to aggrandize himself, gave him but a very cold reception, and, instead of granting him the fortune left him by the will, delayed the payment of it upon various pretences, hoping to check his ambition by limiting his circumstances. But Octavianus, instead of abating his claims, even sold his own patrimonial estate, to pay such legacies as Cæsar had left, and particularly that to the people. By these means he gained a degree of popularity, which his enemies vainly laboured to diminish, and which in fact he had many other methods to procure. His conversation was elegant and insinuating, his face comely and graceful, and his affection to the late dictator so sincere, that every person was charmed either with his piety or his address. But what added still more to his interest was the name of Cæsar, which he had assumed, and, in consequence of which, the former followers of his uncle now flocked in great numbers to him. All these he managed with such art, that Antony now began to conceive a violent jealousy for the talents of his young opponent, and secretly laboured to counteract all his designs. In fact, he did not want reason; for the army near Rome, that had long wished to see the conspirators punished, began to turn from him to his rival, whom they saw more sincerely bent on gratifying their desires. Antony having procured also the government of Hither Gaul from the people, two of his legions that he had brought home from his former government of Macedonia, went over to Octavianus, notwithstanding all his remonstrances to detain them. This produced, as usual, interviews, complaints, recriminations, and pretended reconciliations, which only tended to widen the difference; so that, at length, both sides prepared for war. Thus the state was divided into three distinct factions; that of Octavianus, who aimed at procuring Cæsar's inheritance, and revenging his death; that of Antony, whose sole view was to obtain absolute power; and that of the conspirators, who endeavoured to restore the senate to its former authority.

Antony being raised by the people to his new government of Cisalpine Gaul, contrary to the inclinations of the senate, resolved to enter upon his province immediately, and oppose Brutus, who commanded a small body of troops there, while his army was yet entire. He accordingly left Rome, and marching thither, commanded Brutus to depart. Brutus, being unable to oppose him, retired with his forces; but being pursued by Antony, he was at last besieged in the city of Mutina, of which he sent word to the senate.

In the mean while, Octavianus, who by this time had raised a body of 15,000 men, returned to Rome; and being resolved, before he attempted to take vengeance on the conspirators, if possible to diminish the power of Antony, began by bringing over the senate to second his designs. In this he succeeded by the credit of Cicero, who had long hated Antony because he thought him the enemy of the state. According-

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A war breaks out between them. ly, by means of his eloquence, a decree was passed, ordering Antony to raise the siege of Mutina, to evacuate Cisalpine Gaul, and to await the further orders of the senate upon the banks of the Rubicon. Antony treated the order with contempt; and instead of obeying,

Rome.

obeying, began to show his displeasure at being hitherto so submissive. Nothing now therefore remained for the senate but to declare him an enemy to the state, and to send Octavianus, with the army he had raised, to curb his insolence. The latter was very ready to offer his army for this expedition, in order to revenge his own private injuries, before he undertook those of the public. The two consuls, Hirtius and Panfa, joined all their forces; and thus combined, they marched at the head of a numerous army, against Antony, into Cisalpine Gaul. After one or two ineffectual conflicts, both armies came to a general engagement; in which Antony was defeated, and compelled to fly to Lepidus, who commanded a body of forces in Further Gaul. This victory, however, which promised the senate so much success, produced effects very different from their expectations. The two consuls were mortally wounded; but Panfa, previous to his death, called Octavianus to his bed-side, and advised him to join with Antony, telling him, that the senate only desired to depress both, by opposing them to each other. The advice of the dying consul sunk deep on his spirits; so that from that time he only sought a pretext to break with them. Their giving the command of a party of his army to Decimus Brutus, and their denying him a triumph soon after, served to alienate his mind entirely from the senate, and made him resolve to join Antony and Lepidus. He was willing, however, to try the senate thoroughly, before he came to an open rupture; wherefore he sent to demand the consulship, which was refused him. He then thought himself obliged to keep no measures with that assembly, but privately sent to sound the inclinations of Antony and Lepidus, concerning a junction of forces, and found them as eager to assist as the senate was to oppose him. Antony was, in fact, the general of both armies, and Lepidus was only nominally so, his soldiers refusing to obey him upon the approach of the former. Wherefore, upon being assured of the assistance of Octavianus upon their arrival in Italy, they soon crossed the Alps with an army of 17 legions, breathing revenge against all who had opposed their designs.

The senate now began, too late, to perceive their error in disobliging Octavianus; and therefore gave him the consulship which they had so lately refused, and, to prevent his joining with Antony, flattered him with new honours, giving him a power superior to all law. The first use Octavianus made of his new authority was to procure a law for the condemnation of Brutus and Cassius; after which, he joined his forces with those of Antony and Lepidus.

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They are reconciled, and divide the empire with Lepidus.

The meeting of these three usurpers of their country's freedom was near Mutina, upon a little island of the river Panarus. Their mutual suspicions were the cause of their meeting in this place. Lepidus first entered, and, finding all things safe, made the signal for the other two to approach. Octavianus began the conference, by thanking Antony for his zeal in putting Decimus Brutus to death; who, being abandoned by his army, was taken as he was designing to escape into Macedonia, and beheaded by Antony's command. Their conference lasted for three days; and the result of it was, that the supreme authority should be lodged in their hands, under the title of the *triumvirate*, for the space of five years; that Antony should have

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The second triumvirate.

Gaul; Lepidus, Spain; and Octavianus, Africa, and the Mediterranean islands. As for Italy, and the eastern provinces, they were to remain in common, until their general enemy was entirely subdued. But the last article of their union was a dreadful one. It was agreed that all their enemies should be destroyed; of which each presented a list. In these were comprised not only the enemies, but the friends of the triumvirate, since the partisans of the one were often found among the opposers of the others. Thus Lepidus gave up his brother Paulus to the vengeance of his colleague; Antony permitted the proscription of his uncle Lucius; and Octavianus delivered up the great Cicero. The most sacred rights of nature were violated; 300 senators, and above 2000 knights, were included in this terrible proscription; their fortunes were confiscated, and their murderers enriched with the spoil. Rome soon felt the effects of this infernal union, and the horrid cruelties of Marius and Sylla were renewed. As many as could escape the cruelty of the triumvirs, fled thither into Macedonia to Brutus, or found refuge with young Pompey, who was now in Sicily, and covered the Mediterranean with his numerous navy. Their cruelties were not aimed at the men alone; but the softer sex were in danger of being marked as objects either of avarice or resentment. They made out a list of 1400 women of the best quality, and the richest in the city, who were ordered to give in an account of their fortunes, to be taxed in proportion. But this seemed so unpopular a measure, and was so firmly opposed by Hortensia, who spoke against it, that, instead of 1400 women, they were content to tax only 400. However, they made up the deficiency, by extending the tax upon men; near 100,000, as well citizens as strangers, were compelled to furnish supplies to the subversion of their country's freedom. At last, both the avarice and vengeance of the triumviri seemed fully satisfied, and they went into the senate to declare that the proscription was at an end; and thus having deluged the city with blood, Octavianus and Antony, leaving Lepidus to defend Rome in their absence, marched with their army to oppose the conspirators, who were now at the head of a formidable army in Asia.

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Cruelties of the triumvirs.

Brutus and Cassius, the principal of these, upon the death of Cæsar, being compelled to quit Rome, went into Greece, where they persuaded the Roman students at Athens to declare in the cause of freedom; then parting, the former raised a powerful army in Macedonia and the adjacent countries, while the latter went into Syria, where he soon became master of 12 legions, and reduced his opponent Dolabella to such straits as to kill himself. Both armies soon after joining at Smyrna, the sight of such a formidable force began to revive the declining spirits of the party, and to re-unite the two generals still more closely, between whom there had been some time before a slight misunderstanding. In short, having quitted Italy like distressed exiles, without having one single soldier or one town that owned their command, they now found themselves at the head of a flourishing army, furnished with all the necessaries for carrying on the war, and in a condition to support a contest where the empire of the world depended on the event. This success in raising levies was entirely owing to the justice, moderation,

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They are opposed by Brutus and Cassius.

Rome.

deration, and great humanity of Brutus, who in every instance seemed studious of the happiness of his country.

It was in this flourishing state of their affairs that the conspirators had formed a resolution of going against Cleopatra, who, on her side, had made great preparations to assist their opponents. However, they were diverted from this purpose by an information that Octavianus and Antony were now upon their march, with 40 legions to oppose them. Brutus now, therefore, moved to have their army pass over into Greece and Macedonia, and there meet the enemy; but Cassius so far prevailed as to have the Rhodians and Lycians first reduced, who had refused their usual contribution. This expedition was immediately put in execution, and extraordinary contributions were raised by that means, the Rhodians having scarce any thing left but their lives*. The Lycians suffered still more severely; for having shut themselves up in the city of Xanthus, they defended the place against Brutus with such fury, that neither his art nor intreaties could prevail upon them to surrender. At length, the town being set on fire, by their attempting to burn the works of the Romans, Brutus, instead of laying hold on this opportunity to storm the place, made every effort to preserve it, intreating his soldiers to try all means of extinguishing the fire: but the desperate phrenzy of the citizens was not to be mollified. Far from thinking themselves obliged to their generous enemy for the efforts which were made to save them, they resolved to perish in the flames. Wherefore, instead of extinguishing, they did all in their power to augment the fire, by throwing in wood, dry reeds, and all kinds of fuel. Nothing could exceed the distress of Brutus upon seeing the townsmen thus resolutely bent on destroying themselves: he rode about the fortifications, stretching out his hands to the Xanthians, and conjuring them to have pity on themselves and their city; but, insensible to his expostulations, they rushed into the flames with desperate obstinacy, and the whole soon became an heap of undistinguishable ruin. At this horrid spectacle, Brutus offered a reward to every soldier who would bring him a Lycian alive. The number of those whom it was possible to save from their own fury amounted to no more than 150.

Brutus and Cassius met once more at Sardis, where, after the usual ceremonies were passed between them, they resolved to have a private conference together, when, after much altercation, they were at last perfectly reconciled. After which, night coming on, Cassius invited Brutus and his friends to an entertainment. Upon retiring home, it was that Brutus, as Plutarch tells the story, saw a spectre in his tent. It was in the dead of the night, when the whole camp was perfectly quiet, that Brutus was employed in reading by a lamp that was just expiring. On a sudden he thought he heard a noise as if somebody entered; and looking towards the door, he perceived it open. A gigantic figure, with a frightful aspect, stood before him, and continued to gaze upon him with silent severity. At last Brutus had courage to speak to it: "Art thou a dæmon or a mortal man? and why comest thou to me?" "Brutus," replied the phantom, "I am thy evil genius, thou shalt see me again at Philippi." "Well then," answered Brutus, without being discomposed,

"we shall meet again." Upon which the phantom vanished; and Brutus calling to his servants, asked if they had seen any thing; to which replying in the negative, he again resumed his studies. But as he was struck with so strange an occurrence, he mentioned it the next day to Cassius, who, being an Epicurean, ascribed it to the effect of imagination too much exercised by vigilance and anxiety. Brutus appeared satisfied with this solution of his late terrors; and, as Antony and Octavianus were now advanced into Macedonia, they soon after passed over into Thrace, and advanced to the city of Philippi, near which the forces of the triumvirs were posted.

A battle soon ensued; in which the republicans were defeated, and Cassius killed, as is related in the article PHILIPPI.

The first care of Brutus, when he became the sole general, was to assemble the dispersed troops of Cassius, and animate them with fresh hopes of victory. As they had lost all they possessed by the plundering of their camp, he promised them 2000 denarii each man to make up their losses. This once more inspired them with new ardour; they admired the liberality of their general, and with loud shouts proclaimed his former intrepidity. Still, however, he had not confidence sufficient to face the adversary, who offered him battle the ensuing day. His aim was to starve his enemies, who were in extreme want of provisions, their fleet having been lately defeated. But his single opinion was over-ruled by the rest of his army, who now grew every day more confident of their strength, and more arrogant to their new general. He was, therefore, at last, after a respite of 20 days, obliged to comply with their solicitations to try the fate of the battle. Both armies being drawn out, they remained a long while opposite to each other without offering to engage. It is said that he himself had lost much of his natural ardour by having again seen the spectre the night preceding: however, he encouraged his men as much as possible, and gave the signal for battle within three hours of sun-set. Fortune again declared against him; and the two triumviri expressly ordered by no means to suffer the general to escape, for fear he should renew the war. Thus the whole body of the enemy seemed chiefly intent on Brutus alone, and his capture seemed inevitable. In this deplorable exigence, Lucilius his friend resolved, by his own death, to effect the general's delivery. Upon perceiving a body of Thracian horse closely pursuing Brutus, and just upon the point of taking him, he boldly threw himself in their way, telling them that he was Brutus. The Thracians, overjoyed with so great a prize, immediately dispatched some of their companions, with the news of their success, to the army. Upon which, the ardour of the pursuit now abating, Antony marched out to meet his prisoner; some silently deploring the fate of so virtuous a man; others reproaching that mean desire of life for which he consented to undergo captivity. Antony now seeing the Thracians approach, began to prepare himself for the interview; but the faithful Lucilius, advancing with a cheerful air, owned the deceit that he had put upon him: on which the triumvir, struck with so much fidelity, pardoned him upon the spot; and from that time forward loaded him with benefits, and honoured him with his friendship.

Rome.

* See Rhodes.

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The republicans defeated.

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They are defeated a second time.

232. Brutus sees a spectre.

In

Rome.

In the mean time Brutus, with a small number of friends, passed over a rivulet, and, night coming on, sat down under a rock which concealed him from the pursuit of the enemy. After taking breath for a little time, he sent out one Statilius to give him some information of those that remained; but he never returned, being killed by a party of the enemy's horse. Brutus judging very rightly of his fate, now resolved to die likewise, and spoke to those who stood round him to lend him their last sad assistance. None of them, however, would render him so melancholy a piece of service. At last one Strato, averting his head, presented the sword's point to Brutus; who threw himself upon it, and immediately expired.

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Brutus
kills him-
self.

From the moment of Brutus's death the triumviri began to act as sovereigns, and to divide the Roman dominions between them, as theirs by right of conquest. However, though there were apparently three who thus participated all the power, yet, in fact, only two were actually possessed of it; since Lepidus was at first admitted merely to curb the mutual jealousy of Antony and Octavianus, and was possessed neither of interest in the army nor authority among the people. Their first care was to punish those whom they had formerly marked for vengeance. The head of Brutus was sent to Rome to be thrown at the foot of Cæsar's statue. His ashes, however, were sent to his wife Porcia, Cato's daughter, who afterwards killed herself by swallowing burning coals. It is observed, that of all those who had a hand in the death of Cæsar, not one died a natural death.

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Antony's
extra-
ordinary
policy.

The power of the triumviri being thus established upon the ruins of the commonwealth, Antony went into Greece, and spent some time at Athens, conversing among the philosophers, and assisting at their disputes in person. From thence he passed over into Asia, where all the monarchs of the east, who acknowledged the Roman power, came to pay him their obedience. In this manner he proceeded from kingdom to kingdom, attended by a crowd of sovereigns, exacting contributions, distributing favours, and giving away crowns with capricious insolence. He presented the kingdom of Cappadocia to Syfenes, in prejudice of Ariarathes, only because he found pleasure in the beauty of Glaphyra, the mother of the former. He settled Herod in the kingdom of Judea, and supported him against every opposer. But among all the sovereigns of the east who shared his favours, none had so large a part as Cleopatra, the celebrated queen of Egypt.

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Has an in-
terview
with Cleo-
patra.

It happened that Serapion, her governor in the island of Cyprus, had formerly furnished some succours to the conspirators; and it was thought proper that she should answer for his conduct on that occasion. Accordingly, having received orders from Antony to come and clear herself of this imputation of infidelity, she readily complied, equally conscious of the goodness of her cause and the power of her beauty. She had already experienced the force of her charms upon Cæsar and Pompey's eldest son; and the addition of a few years since that time had not impaired their lustre. Antony was now in Tarsus, a city of Cilicia, when Cleopatra resolved to attend his court in person. She sailed down the river Cydnus, at the mouth of which the city stood, with the most sumptuous pageantry. Her galley was covered with gold; the sails were of purple, large, and floating in the wind. The oars of

silver kept tune to the sound of flutes and cymbals. She herself lay reclined on a couch fringed with stars of gold, and with such ornaments as poets and painters had usually ascribed to Venus. On each side were boys like Cupids, who fanned her by turns; while the most beautiful nymphs, dressed like Nereids and Graces, were placed at proper distances around her. Upon the banks of the river were kept burning the most exquisite perfumes, while an infinite number of people gazed upon the sight. Antony was captivated with her beauty; and, leaving all his business to satisfy his passion, shortly after followed her into Egypt.

While he thus remained idle, Octavianus, who took upon him to lead back the veteran troops and settle them in Italy, was assiduously employed in providing for their subsistence. He had promised them lands at home, as a recompense for their past services; but they could not receive new grants, without turning out the former inhabitants. In consequence of this, multitudes of women, with children in their arms, whose tender years and innocence excited universal compassion, daily filled the temples and the streets with their distresses. Numbers of husbandmen and shepherds came to deprecate the conqueror's intention, or to obtain an habitation in some other part of the world. Amongst this number was Virgil the poet, who in an humble manner begged permission to retain his patrimonial farm: Virgil obtained his request; but the rest of his countrymen, of Mantua and Cremona, were turned out without mercy.

Italy and Rome now felt the most extreme miseries; the insolent soldiers plundered at will; while Sextus Pompey, being master of the sea, cut off all foreign communication, and prevented the people's receiving their usual supplies of corn. To these mischiefs were added the commencement of another civil war. Fulvia, the wife of Antony, who had been left behind him at Rome, had felt for some time all the rage of jealousy, and resolved to try every method of bringing back her husband from the arms of Cleopatra. She considered a breach with Octavianus as the only probable means of rousing him from his lethargy; and accordingly, with the assistance of Lucius her brother-in-law, who was then consul, and entirely devoted to her interest, she began to sow the seeds of dissension. The pretext was, that Antony should have a share in the distribution of lands as well as Octavianus. This produced some negotiations between them; Octavianus offered to make the veterans themselves umpires in the dispute. Lucius refused to acquiesce; and being at the head of more than six legions, mostly composed of such as had been dispossessed of their lands, he resolved to compel Octavianus to accept of whatever terms he should offer. Thus a new war was excited between Octavianus and Antony; or, at least, the generals of the latter assumed the sanction of his name. Octavianus, however, proved victorious: Lucius was hemmed in between two armies, and constrained to retreat to Perugia, a city of Etruria, where he was closely besieged by the opposite party. He made many desperate sallies, and Fulvia did all in her power to relieve him, but without success. He was at last, therefore, reduced to such extremity by famine, that he came out in person and delivered himself up to the mercy of the conqueror. Octavianus received him very honourably, and generously pardoned him and all his followers. Thus having con-
cluded

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Miseries
sustained
by the Ro-
mans.

Rome. eluded the war in a few months, he returned in triumph to Rome.

Antony, who, during this interval, was revelling in all the studied luxuries procured him by his insidious mistress, having heard of his brother's overthrow, and his wife's being compelled to leave Italy, was resolved to oppose Octavianus without delay. He accordingly sailed at the head of a considerable fleet from Alexandria to Tyre, from thence to Cyprus and Rhodes, and had an interview with Fulvia his wife at Athens. He much blamed her for occasioning the late disorders, testified the utmost contempt for her person, and, leaving her upon her death-bed at Sycion, hastened into Italy to fight Octavianus. They both met at Brundisium; and it was now thought that the flames of a civil war were going to blaze out once more. The forces of Antony were numerous, but mostly newly raised; however, he was assisted by Sextus Pompeius, who in these oppositions of interests was daily coming into power. Octavianus was at the head of those veterans who had always been irresistible, but who seemed no way disposed to fight against Antony their former general. A negotiation was therefore proposed; and a reconciliation was effected. All offences and affronts were mutually forgiven; and to cement the union, a marriage was concluded between Antony and Octavia, the sister of Octavianus. A new division of the Roman empire was made between them; Octavianus was to have the command of the west, Antony of the east, while Lepidus was obliged to content himself with the provinces in Africa. As for Sextus Pompeius, he was permitted to retain all the islands he had already possessed, together with Peloponnesus: he was also granted the privilege of demanding the consulship in his absence, and of discharging that office by any of his friends. It was likewise stipulated to leave the sea open, and pay the people what corn was due out of Sicily. Thus a general peace was concluded, to the great satisfaction of the people, who now expected a cessation from all their calamities.

This calm seemed to continue for some time: Antony led his forces against the Parthians, over whom his lieutenant, Ventidius, had gained great advantages. Octavianus drew the greatest part of his army into Gaul, where there were some disturbances; and Pompey went to secure his newly ceded province to his interest. It was on this quarter that fresh motives were given for renewing the war. Antony, who was obliged by treaty to quit Peloponnesus, refused to evacuate it till Pompey had satisfied him for such debts as were due to him from the inhabitants. This Pompey would by no means comply with; but immediately fitted out a new fleet, and renewed his former enterprises, by cutting off such corn and provisions as were consigned to Italy. Thus the grievances of the poor were again renewed; and the people began to complain, that instead of three tyrants they were now oppressed by four.

In this exigence, Octavianus, who had long meditated the best means of diminishing the number, resolved to begin by getting rid of Pompey, who kept the state in continual alarms. He was master of two fleets; one of which he had caused to be built at Ravenna; and another which Menodorus, who revolted from Pompey, brought to his aid. His first attempt was to invade Sicily; but being overpowered in his passage by

Pompey, and afterwards shattered in a storm, he was obliged to defer his designs to the ensuing year. During this interval he was reinforced by a fleet of 120 ships, given him by Antony, with which he resolved once more to invade Sicily on three several quarters. But fortune seemed still determined to oppose him. He was a second time disabled and shattered by a storm: which so raised the vanity of Pompey, that he began to style himself the *son of Neptune*. However, Octavianus was not to be intimidated by any disgraces; for having shortly refitted his navy, and recruited his forces, he gave the command of both to Agrippa, his faithful friend and associate in war. Agrippa proved himself worthy of the trust reposed in him: he began his operations by a victory over Pompey; and, though he was shortly after worsted himself, he soon after gave his adversary a complete and final overthrow. Thus undone, Pompey resolved to fly to Antony, from whom he expected refuge, as he had formerly obliged that triumvir by giving protection to his mother. However, he tried once more, at the head of a small body of men, to make himself independent, and even surprised Antony's officers who had been sent to accept of his submissions. Nevertheless, he was at last abandoned by his soldiers, and delivered up to Titus, Antony's lieutenant, who shortly after caused him to be slain.

The death of this general removed one very powerful obstacle to the ambition of Octavianus, and he resolved to take the earliest opportunity to get rid of the rest of his associates. An offence was soon furnished by Lepidus, that served as a sufficient pretext for depriving him of his share in the triumvirate. Being now at the head of 22 legions, with a strong body of cavalry, he idly supposed that his present power was more than an equivalent to the popularity of Octavianus. He therefore resolved upon adding Sicily, where he then was, to his province; pretending a right, as having first invaded it. His colleague sent to expostulate upon these proceedings; but Lepidus fiercely replied, 'that he was determined to have his share in the administration, and would no longer submit to let one alone possess all the authority.' Octavianus was previously informed of the disposition of Lepidus's soldiers; for he had, by his secret intrigues and largesses, entirely attached them to himself. Wherefore, without further delay, he with great boldness went alone to the camp of Lepidus, and with no other assistance than his private bounties, and the authority he had gained by his former victories, he resolved to depose his rival. The soldiers thronged round him with the most dutiful alacrity, while Lepidus hastened to prevent their defection. But Octavianus, though he received a wound from one of the centurions, went with great presence of mind to the place where the military ensigns were planted, and, flourishing one of them in the air, all the legionary soldiers ran in crowds and saluted him as their general. Lepidus being thus abandoned by his men, divested himself of all the marks of his authority, which he could no longer keep, and submissively threw himself at the feet of Octavianus. This general spared his life, notwithstanding the remonstrances of his army; but deprived him of all his former authority, and banished him to Circæum.

Octavianus was received upon his return to Rome with universal joy; the senators met him at the gates,

Rome.

240

Sextus
Pompeius
defeated
and taken
prisoner.

239

The em-
pire divi-
ded anew.

242

Lepidus
defeated
and ban-
ished.

Rome.

242
Antony's
imprudent
conduct.

See
Parthia.

and conducted him to the capitol: the people followed, crowned with garlands of flowers; and after having returned thanks to the gods, waited upon him to his palace. There remained now but one obstacle to his ambition, which was Antony, whom he resolved to remove, and for that purpose began to render his character as contemptible as he possibly could at Rome. In fact, Antony's conduct did not a little contribute to promote the endeavours of his ambitious partner in the state. He had marched against the Parthians with a prodigious army; but was forced to return with the loss of the fourth part of his forces, and all his baggage*. This extremely diminished his reputation; but his making a triumphal entry into Alexandria soon after, entirely disgusted the citizens of Rome. However, Antony seemed quite regardless of their resentment: totally disregarding the business of the state, he spent whole days and nights in the company of Cleopatra, who studied every art to increase his passion, and vary his entertainments. Not contented with sharing in her company all the delights which Egypt could afford, Antony was resolved to enlarge his sphere of luxury, by granting her many of those kingdoms which belonged to the Roman empire. He gave her all Phœnicia, Celo-Syria, and Cyprus; with a great part of Cilicia, Arabia, and Judea; gifts which he had no right to bestow, but which he pretended to grant in imitation of Hercules. This complication of vice and folly at length totally exasperated the Romans; and Octavianus, willing to take advantage of their resentment, took care to exaggerate all his defects. At length, when he found the people sufficiently irritated against him, he resolved to send Octavia, who was then at Rome, to Antony, as if with a view of reclaiming her husband; but, in fact, to furnish a sufficient pretext of declaring war against him, as he knew she would be dismissed with contempt.

243
Divorces
Octavia,
and mar-
ries Cleo-
patra.

Antony was now in the city of Leucopolis, revelling with his insidious paramour, when he heard that Octavia was at Athens, upon her journey to visit him. This was very unwelcome news to him as well as to Cleopatra; who, fearing the charms of her rival, endeavoured to convince Antony of the strength of her passion. He frequently caught her in tears, which she seemed as if willing to hide; and often intreated her to tell him the cause, which she seemed willing to suppress. These artifices, together with the ceaseless flattery and importunity of her creatures, prevailed so much upon Antony's weakness, that he commanded Octavia to return home without seeing her, and attached himself still more closely to Cleopatra than before. His ridiculous passion now began to have no bounds. He resolved to own her for his wife, and entirely to repudiate Octavia. He accordingly assembled the people of Alexandria in the public theatre, where was raised an alcove of silver, under which were placed two thrones of gold, one for himself and the other for Cleopatra. There he seated himself, dressed like Bacchus, while Cleopatra sat beside him clothed in the ornaments and attributes of Isis, the principal deity of the Egyptians. On that occasion he declared her queen of all the countries which he had already bestowed upon her; while he associated Cæsarion, her son by Cæsar, as her partner in the government. To the two children which he had by her himself he gave the title of *king of kings*, with very extensive do-

minions; and, to crown his absurdities, he sent a minute account of his proceedings to the two consuls at Rome. It was now necessary to act up to his imaginary dignity; new luxuries and pageantries were now therefore studied, and new marks of profusion found out: not less than 60,000*l.* of our money were lavished upon one single entertainment; it is said, upon this occasion, that Cleopatra dissolved a pearl of great value in vinegar, and drank it off. But we are told of one circumstance that might well repress their delights, and teach mankind to relish the beverage of virtue, however simple, above their greatest luxuries. He was suspicious of being poisoned in every meal; he feared Cleopatra, whom he so much loved, and would eat nothing without having it previously tasted by one of his attendants.

In the mean time Octavianus had now a sufficient pretext for declaring war; and informed the senate of his intentions. However, he deferred the execution of his design for a while, being then employed in quelling an insurrection of the Illyrians. The following year was chiefly taken up in preparations against Antony, who, perceiving his design, remonstrated to the senate, that he had many causes of complaint against his colleague, who had seized upon Sicily without offering him a share; alleging that he had also dispossessed Lepidus, and kept to himself the province he had commanded; and that he had divided all Italy among his own soldiers, leaving nothing to recompense those in Asia. To this complaint Octavianus was contented to make a sarcastic answer; implying, that it was absurd to complain of his distribution of a few trifling districts in Italy, when Antony having conquered Parthia, he might now reward his soldiers with cities and provinces. The sarcasm upon Antony's misfortunes in Parthia so provoked him, that he ordered Canidius, who commanded his army, to march without intermission into Europe; while he and Cleopatra followed to Samos, in order to prepare for carrying on the war with vigour. When arrived there, it was ridiculous enough to behold the odd mixture of preparations for pleasure and for war. On one side all the kings and princes from Europe to the Euxine sea had orders to send him thither supplies both of men, provisions, and arms; on the other side, all the comedians, dancers, buffoons, and musicians of Greece, were ordered to attend him. Thus, frequently, when a ship was thought to arrive laden with soldiers, arms, and ammunition, it was found only filled with players and theatrical machinery. When news was expected of the approach of an army, messengers only arrived with tidings of a fresh quantity of venison. The kings who attended him endeavoured to gain his favour more by their entertainments than their warlike preparations; the provinces strove rather to please him by sacrificing to his divinity, than by their alacrity in his defence; so that some were heard to say, "What rejoicings would not this man make for a victory, when he thus triumphs at the eve of a dangerous war!" In short, his best friends now began to forsake his interests.

His delay at Samos, and afterwards at Athens, where he carried Cleopatra to receive new honours, was extremely favourable to the arms of Octavianus. This general was at first scarcely in a disposition to oppose him, had he gone into Italy; but he soon found time

Rome.

244
Octavianus
resolves to
make war
upon him.

Rome.

to put himself in a condition for carrying on the war, and shortly after declared it against him in form. All Antony's followers were invited over to join him, with great promises of rewards: but they were not declared enemies, partly to prevent their growing desperate, and partly to give a show of moderation to his own party. At length both found themselves in readiness to begin the war, and their armies were answerable to the empire they contended for. The one was followed by all the forces of the east; the other drew all the strength of the west to support his pretensions. Antony's force composed a body of 100,000 foot and 12,000 horse; while his fleet amounted to 500 ships of war. The army of Octavianus mustered but 80,000 foot, but equalled his adversary's in his number of cavalry: his fleet was but half as numerous as Antony's; however, his ships were better built, and manned with better soldiers.

245
Antony
defeated at
Actium.

The great decisive engagement, which was a naval one, was fought near Actium, a city of Epirus, at the entrance of the gulph of Ambracia. Antony ranged his ships before the mouth of the gulph; and Octavianus drew up his fleet in opposition. Neither general assumed any fixed station to command in; but went about from ship to ship wherever his presence was necessary. In the mean time, the two land armies, on opposite sides of the gulph, were drawn up, only as spectators of the engagement; and encouraged the fleets by their shouts to engage. The battle began on both sides with great ardour, and after a manner not practised upon former occasions. The prows of their vessels were armed with brazen points; and with these they drove furiously against each other. In this conflict the ships of Antony came with greater force, but those of Octavianus avoided the shock with greater dexterity. On Antony's side, the sterns of the ships were raised in form of a tower; from whence they threw arrows from machines for that purpose. Those of Octavianus made use of long poles hooked with iron, and fire-pots. They fought in this manner for some time with equal animosity; nor was there any advantage on either side, except a small appearance of disorder in the centre of Antony's fleet. But all of a sudden Cleopatra determined the fortune of the day. She was seen flying from the engagement attended by 60 sail; struck, perhaps, with the terrors natural to her sex: but what increased the general amazement was, to behold Antony himself following soon after, and leaving his fleet at the mercy of the conquerors. The engagement, notwithstanding, continued with great obstinacy till five in the evening; when Antony's forces, partly constrained by the conduct of Agrippa, and partly persuaded by the promises of Octavianus, submitted to the conqueror. The land-forces soon after followed the example of the navy; and all yielded to the conqueror without striking a blow the fourth day after the battle.

When Cleopatra fled, Antony pursued her in a five-oared galley; and coming along-side of her ship entered, without seeing or being seen by her. She was in the stern, and he went to the prow, where he remained for some time silent, holding his head between his hands. In this manner he continued three whole days; during which, either through indignation or shame, he neither saw nor spoke to Cleopatra. At last, when they were arrived at the promontory of Ténarus, the

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queen's female attendants reconciled them, and every thing went on as before. Still, however, he had the consolation to suppose his army continued faithful to him; and accordingly dispatched orders to his lieutenant Canidius to conduct it into Asia. However, he was soon undeceived when he arrived in Africa, where he was informed of their submission to his rival. This account so transported him with rage, that he was hardly prevented from killing himself; but at length, at the entreaty of his friends, he returned to Alexandria, in a very different situation from that in which he had left it some time before. Cleopatra, however, seemed to retain that fortitude in her misfortunes which had utterly abandoned her admirer. Having amassed considerable riches by means of confiscation and other acts of violence, she formed a very singular and unheard of project; this was to convey her whole fleet over the isthmus of Suez into the Red Sea, and thereby save herself in another region beyond the reach of Rome, with all her treasures. Some of her vessels were actually transported thither, pursuant to her orders; but the Arabians having burnt them, and Antony dissuading her from the design, she abandoned it for the more improbable scheme of defending Egypt against the conqueror. She omitted nothing in her power to put his advice in practice, and made all kinds of preparations for war; at least hoping thereby to obtain better terms from Octavianus. In fact, she had always loved Antony's fortunes rather than his person; and if she could have fallen upon any method of saving herself, though even at his expence, there is no doubt but she would have embraced it with gladness. She even still had some hopes from the power of her charms, though she was arrived almost at the age of 40; and was desirous of trying upon Octavianus those arts which had been so successful with the greatest men of Rome. Thus, in three embassies which were sent one after another from Antony to his rival in Asia, the queen had always her secret agents, charged with particular proposals in her name. Antony desired no more than that his life might be spared, and to have the liberty of passing the remainder of his days in obscurity. To these proposals Octavianus made no reply. Cleopatra sent him also public proposals in favour of her children; but at the same time privately resigned him her crown, with all the ensigns of royalty. To the queen's public proposal no answer was given; to her private offer he replied, by giving her assurances of his favour in case she sent away Antony or put him to death. These negotiations were not so private but they came to the knowledge of Antony, whose jealousy and rage was now heightened by every concurrence. He built a small solitary house upon a mole in the sea; and there he passed his time, shunning all commerce with mankind, and professing to imitate Timon the man-hater. However, his furious jealousy drove him even from this retreat into society; for hearing that Cleopatra had many secret conferences with one Thyrsus, an emissary from Octavianus, he seized upon him, and having ordered him to be cruelly scourged, he sent him back to his patron. At the same time he sent letters by him, importing, that he had chastised Thyrsus for insulting a man in his misfortunes; but withal he gave his rival permission to avenge himself, by scourging Hiparchus, Antony's freedman, in the same manner. The revenge, in this case, would have

Rome.

246
He resolves
to defend
Egypt
against the
conqueror.

3 D

been

Rome. been highly pleasing to Antony, as Hiparchus had left him to join the fortunes of his more successful rival.

Meanwhile, the operations of the war were carried vigorously forward, and Egypt was once more the theatre of the contending armies of Rome. Gallus, the lieutenant of Octavianus, took Paretonium, which opened the whole country to his incursions. On the other side, Antony, who had still considerable forces by sea and land, wanted to take that important place from the enemy. He therefore marched towards it, flattering himself, that as soon as he should show himself to the legions which he had once commanded, their affection for their ancient general would revive. He approached, therefore, and exhorted them to remember their former vows of fidelity. Gallus, however, ordered all the trumpets to sound, in order to hinder Antony from being heard, so that he was obliged to retire.

247
Pelusium
given up to
Octavianus.

Octavianus himself was in the mean time advancing with another army before Pelusium, which, by its strong situation, might have retarded his progress for some time. But the governor of the city, either wanting courage to defend it, or previously instructed by Cleopatra to give it up, permitted him to take possession of the place; so that Octavianus had now no obstacle in his way to Alexandria, whither he marched with all expedition. Antony, upon his arrival, sallied out to oppose him, fighting with great desperation, and putting the enemy's cavalry to flight. This slight advantage once more revived his declining hopes; and, being naturally vain, he re-entered Alexandria in triumph. Then going, all armed as he was, to the palace, he embraced Cleopatra, and presented her a soldier who had distinguished himself in the late engagement. The queen rewarded him very magnificently; presenting him with an head-piece and breast-plate of gold. With these, however, the soldier went off the next night to the other army. Antony could not bear this defection without fresh indignation; he resolved, therefore, to make a bold expiring effort by sea and land, but previously offered to fight his adversary in single combat. Octavianus too well knew the inequality of their situations to comply with this forlorn offer; he only, therefore, coolly replied, that Antony had ways enough to die besides single combat.

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Antony de-
serted by his
fleet.

The evening before the day appointed for the last desperate attempt, he ordered a grand entertainment to be prepared. At day-break he posted the few troops he had remaining upon a rising ground near the city: from whence he sent orders to his galleys to engage the enemy. There he waited to be a spectator of the combat; and, at first, he had the satisfaction to see them advance in good order; but his approbation was soon turned into rage, when he saw his ships only saluting those of Octavianus, and both fleets uniting together, and sailing back into the harbour. At the very same time his cavalry deserted him. He tried, however, to lead on his infantry; which were easily vanquished, and he himself compelled to return into the town. His anger was now ungovernable; he could not help crying out aloud as he passed, that he was betrayed by Cleopatra, and delivered by her to those who, for her sake alone, were his enemies. In these suspicions he was not deceived; for it was by secret orders from the queen that the fleet had passed over to the enemy.

Rome. Cleopatra had, for a long while, dreaded the effects of Antony's jealousy; and had, some time before, prepared a method of obviating any sudden sallies it might produce. Near the temple of Isis she had erected a building, which was seemingly designed for a sepulchre. Hither she removed all her treasure and most valuable effects, covering them over with torches, faggots, and other combustible matter. This sepulchre she designed to answer a double purpose; as well to screen her from the sudden resentments of Antony, as to make Octavianus believe that she would burn all her treasures in case he refused her proper terms of capitulation. Here, therefore, she retired from Antony's present fury; shutting the gates, which were fortified with bolts and bars of iron: but in the mean time gave orders that a report should be spread of her death.—This news, which soon reached Antony, recalled all his former love and tenderness. He now lamented her death with the same violence he had but a few minutes before seemed to desire it; and called one of his freed-men, named Eros, whom he had engaged by oath to kill him whenever fortune should drive him to this last resource. Eros being now commanded to perform his promise, this faithful follower drew the sword, as if going to execute his orders; but turning his face, plunged it into his own bosom, and died at his master's feet. Antony for a while hung over his faithful servant, and, commending his fidelity, took up the sword, with which stabbing himself in the belly, he fell backward upon a little couch. Though the wound was mortal, yet the blood stopping he recovered his spirits, and earnestly conjured those who were come into the room to put an end to his life; but they all fled, being seized with fright and horror. He therefore continued in agonies for some time; till he was informed by one of the queen's secretaries that his mistress was still alive. He then earnestly desired to be carried to the place where she was. They accordingly brought him to the gate of the sepulchre; but Cleopatra, who would not permit it to be opened, appeared at the window, and threw down cords in order to pull him up. In this manner, assisted by her two female attendants, she raised him all bloody from the ground; and while yet suspended in the air, he continued stretching out his hands to encourage her. Cleopatra and her maids had only just strength sufficient to raise him; and at last, with much straining, they effected their purpose, and carried him to a couch, on which they gently laid him. Here she gave way to her sorrow, tearing her clothes, beating her breast, and kissing the wound of which he was dying. She called upon him as her lord, her husband, her emperor, and seemed to have forgot her own distresses in the greatness of his sufferings. Antony entreated her to moderate the transports of her grief, and asked for some wine. After he had drank, he entreated Cleopatra to endeavour to preserve her life, if she could do it with honour; and recommended Proculus, a friend of Octavianus, as one she might rely on to be her intercessor. Just as he had done speaking, he expired; and Proculus made his appearance by command of Octavianus, who had been informed of Antony's desperate conduct. He was sent to try all means of getting Cleopatra into his power; his master having a double motive for his solicitude on this occasion; one, to prevent her destroying the treasures she had taken with her into the tomb; the other,

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Stabs him-
self with his
sword.

250
He dies.

Rome.

251
Cleopatra
taken.

to preserve her person as an ornament to grace his triumph. Cleopatra, however, was upon her guard, and would not confer with Proculus, except through the gate, which was well secured. In the mean time, while he designedly drew out the conference to some length, and had given Gallus, one of his fellow-soldiers, directions to carry on the conversation in his absence, he entered with two more by the window at which Antony had been drawn up. As soon as he was entered, he ran down to the gate; and one of the women crying out, that they were taken alive, Cleopatra, perceiving what had happened, drew a poniard, and attempted to stab herself; but Proculus prevented the blow, and gently remonstrated that she was cruel in refusing so good a prince as his master was the pleasure of displaying his clemency. He then forced the poniard out of her hand, and examined her clothes to be certain she had no poison about her. Thus leaving every thing secured, he went to acquaint his master with his proceedings.

Octavianus was extremely pleased at finding her in his power: he sent Epaphroditus to bring her to his palace, and to watch her with the utmost circumspection. He was likewise ordered to use her, in every respect, with that deference and submission which were due to her rank, and to do every thing in his power to render her captivity agreeable. She was permitted to have the honour of granting Antony the rites of burial, and furnished with every thing she desired, that was becoming his dignity to receive, or her love to offer. Yet still she languished under her new confinement. Her excessive sorrow, her many losses, and the blows she had given her bosom, produced a fever which she seemed willing to increase. She resolved to abstain from taking any nourishment, under the pretence of a regimen necessary for her disorder; but Octavianus being made acquainted with the real motive by her physician, began to threaten her with regard to her children, in case she persisted. This was the only punishment that could now affect her; she allowed herself to be treated as they thought proper, and received whatever was prescribed for her recovery.

In the mean time Octavianus made his entry into Alexandria; taking care to mitigate the fears of the inhabitants, by conversing familiarly as he went along with Areus, a philosopher, and a native of the place. The citizens, however, trembled at his approach; and when he placed himself upon the tribunal, they prostrated themselves, with their faces to the ground, before him, like criminals who waited the sentence of their execution. Octavianus presently ordered them to rise; telling them, that three motives induced him to pardon them: His respect for Alexander, who was the founder of their city; his admiration of its beauty; and his friendship for Areus, their fellow-citizen. Two only of particular note were put to death upon this occasion; Antony's eldest son Antyllus, and Cæsario, the son of Julius Cæsar; both betrayed into his hands by their respective tutors, who themselves suffered for their perfidy shortly after. As for the rest of Cleopatra's children, he treated them with great gentleness, leaving them to the care of those who were entrusted with their education, who had orders to provide them with every thing suitable to their birth. When she was recovered from her late indisposition, he came to visit her in person.—Cleopatra had been preparing for this interview, and

made use of every method she could think of to propitiate the conqueror, and to gain his affection; but in vain. However, at his departure, Octavianus imagined that he had reconciled her to life, and to the indignity of being shown in the intended triumph, which he was preparing for on his return to Rome: but in this he was deceived. Cleopatra, all this time, had kept a correspondence with Dolabella, a young Roman of high birth, in the camp of Octavianus; who, perhaps, from compassion, or stronger motives, was interested in the misfortunes of that princess. From him she learnt the intentions of Octavianus, and that he was determined to send her off in three days, together with her children, to Rome. She now therefore determined upon dying; but previously intreated permission to pay her oblations at Antony's tomb. This request being granted her, she was carried with her two female attendants to the stately monument where he was laid. There she threw herself upon his coffin, bewailed her captivity, and renewed her protestations not to survive him. She then crowned the tomb with garlands of flowers; and having kissed the coffin a thousand times, she returned home to execute her fatal resolution. Having bathed, and ordered a sumptuous banquet, she attired herself in the most splendid manner. She then feasted as usual; and soon after ordered all but her two attendants, Charmion and Iras, to leave the room. Then, having previously ordered an asp to be secretly conveyed to her in a basket of fruit, she sent a letter to Octavianus, informing him of her fatal purpose, and desiring to be buried in the same tomb with Antony. Octavianus, upon receiving this letter, instantly dispatched messengers to prevent her, but they arrived too late. Upon entering the chamber, they beheld Cleopatra lying dead upon a gilded couch, arrayed in her royal robes. Near her, Iras, one of her faithful attendants, was stretched lifeless at the feet of her mistress: and Charmion herself, almost expiring, was settling the diadem upon Cleopatra's head. She died at the age of thirty-nine, after having reigned twenty-two years. Her death put an end to the monarchy in Egypt, which had flourished there from time immemorial.

Octavianus seemed much troubled at Cleopatra's death, as it deprived him of a principal ornament in his intended triumph. However, the manner of it a good deal exalted her character among the Romans, with whom suicide was considered as a virtue. Her dying request was complied with, her body being laid by Antony's, and a magnificent funeral prepared for her and her two faithful attendants.

After having settled the affairs of Egypt, he left Alexandria in the beginning of September, in the year of Rome 720, with a design to return through Syria, Asia Minor, and Greece, to Italy. On his arrival at Antioch, he found there Tiridates, who had been raised to the throne of Parthia in opposition to Phraates, and likewise ambassadors from Phraates, who were all come on the same errand; to wit, to solicit the assistance of the Romans against each other. Octavianus gave a friendly answer both to Tiridates and the ambassadors of Phraates, without intending to help either; but rather with a design to animate the one against the other, and by that means to weaken both, so far as to render the Parthian name no longer formidable to Rome. After this, having appointed Messala

Rome.

252
Her death.

Rome. Corvinus governor of Syria, he marched into the province of Asia, properly so called, and there took up his winter-quarters. He spent the whole winter in settling the affairs of the several provinces of Asia Minor and the adjacent islands; and early in the spring passed into Greece, whence he set out for Rome, which he entered in the month Sextilis, afterwards called *August*, in three triumphs, which were celebrated for three days together.

253
Octavianus has thoughts of resigning his power.

And now Octavianus was at the height of his wishes, sole sovereign, sole master, of the whole Roman empire. But, on the other hand, the many dangers which attend an usurped power, appearing to him in a stronger light than ever, filled his mind with a thousand perplexing thoughts. The natural aversion of the Romans to a kingly government, their love of liberty, and the ides of March, when his father Julius was murdered in full senate by those very men whom he thought the most devoted to his person, made him fear there might arise another Brutus, who, to restore liberty to his country, might assassinate him on his very throne. This he knew had happened to Julius Cæsar; whereas Sylla, after having laid down the authority he had usurped, died peaceably in his bed in the midst of his enemies. The passion of fear outweighed in his soul the charms of a diadem, and inclined him to follow the example of Sylla. He was indeed very unwilling to part with his authority; but fear began to get the better of his ambition. However, before he came to any resolution, he thought it advisable to consult his two most intimate and trusty friends, Agrippa and Mæcenas; the former no less famous for his probity than his valour; and the latter a man of great penetration, and generally esteemed the most refined politician of his age. Agrippa enlarged on the many and almost inevitable dangers which attend monarchy, insupportable to a free people, and to men educated in a commonwealth. He did not forget the examples of Sylla and Cæsar; and closed his speech with exhorting Octavianus to convince the world, by restoring liberty to his country, that the only motive for his taking up arms was to revenge his father's death.

254
But is dissuaded from it by Mæcenas.

Mæcenas, on the other hand, remonstrated to him, that he had done too much to go back; that, after so much bloodshed, there could be no safety for him but on the throne; that, if he divested himself of the sovereign power, he would be immediately prosecuted by the children and friends of the many illustrious persons whom the misfortunes of the times had forced him to sacrifice to his safety; that it was absolutely necessary for the welfare and tranquillity of the republic, that the sovereign power should be lodged in one person, not divided among many, &c. Octavianus thanked them both for their friendly advice, but showed himself inclined to follow the opinion of Mæcenas; whereupon that able minister gave him many wise instructions and rules of government, which are related at length by Dio Cassius, and will ever be looked upon as a masterpiece in politics. Among other things he told him, That he could not fail of being successful in all his undertakings, happy in his lifetime, and famous in history after his death, if he never deviated from this rule; to wit, To govern others as he would wish to be governed himself, had he been born to obey and not to command. He added,

Rome. That if, in taking upon him the sovereign power, he dreaded the name of king, a name so odious in a commonwealth, he might content himself with the title of *Cæsar* or *Imperator*, and under that name, which was well known to the Romans, enjoy all the authority of a king.

This advice Octavianus followed, and from that time laid aside all thoughts of abdicating the sovereign power; but, to deceive the people into a belief that they still enjoyed their ancient government, he continued the old magistrates, with the same name, pomp, and ornaments, but with just as much power as he thought fit to leave them. They were to have no military power, but only their old jurisdiction of deciding finally all causes, except such as were capital; and though some of these last were left to the governor of Rome, yet the chief he reserved for himself. He paid great court to the people: the very name that covered his usurpation was a compliment to them; for he affected to call it the power of the tribuneship, though he acted as absolutely by it as if he had called it the dictatorial power. He likewise won the hearts of the populace by cheapness of provisions and plentiful markets; he frequently entertained them with shows and sports; and by these means kept them in good-humour, and made them forget usurpation, slavery, and every public evil; people in ease and plenty being under no temptation of inquiring into the title of their prince, or resenting acts of power which they do not immediately feel.

As for the senate, he filled it with his own creatures, raising the number of the conscript fathers to 1000. He supplied several poor senators with money out of the treasury to discharge the public offices, and on all occasions affected an high regard for that venerable body; but at the same time divested them of all power, and reduced them to mere cyphers. To prevent them from raising new disturbances in the distant provinces, he issued an edict, forbidding any senator to travel out of Italy without leave, except such as had lands in Sicily, or Narbonne Gaul, which at that time comprehended Languedoc, Provence, and Dauphiny. To these provinces, which were near Italy, and in a perfect state of tranquillity, they had full liberty to retire when they pleased, and live there upon their estates. Before he ended his sixth consulship, he took a census of the people, which was 41 years after the last; and in this the number of the men fit to bear arms amounted to 463,000, the greatest that had ever been found before. He likewise celebrated the games which had been decreed by the senate for his victory at Actium; and it was ordered, that they should be celebrated every fifth year, four colleges of priests being appointed to take care of them; to wit, the pontifices, the augurs, the septemvirs, and quindecimvirs. The more to gain the affections of the people, he annulled, by one edict, the many severe and unjust laws which had been enacted during the triumvirate. He raised many public buildings, repaired the old ones, and added many stately ornaments to the city, which at this time was, if we may give credit to some ancient writers, about 50 miles in compass, and contained near four millions of souls, reckoning men, women, children, and slaves. He attended business, reformed abuses, showed great regard for the Roman name, procured public abundance, pleasure, and jollity, often

Rome.

often appearing in person at the public diversions, and in all things studying to render himself dear to the populace.

255
The senate
intreat him
to accept
the sove-
reignty.

And now Octavianus, entering upon his seventh consulship with M. Agrippa, the third time consul, and finding all things ripe for his design, the people being highly pleased with his mild government, and the senate filled with his creatures, whose fortunes depended upon his holding the power he had usurped, went by the advice of Agrippa and Mæcenas to the senate-house; and there, in a studied speech, offered to resign his authority, and put all again into the hands of the people upon the old foundation of the commonwealth; being well apprised, that the greater part of the conscript fathers, whose interests were interwoven with his, would unanimously press him to the contrary: Which happened accordingly; for they not only interrupted him while he was speaking, but, after he had done, unanimously besought him to take upon himself alone the whole government of the Roman empire. He, with a seeming reluctance, yielded at last to their request, as if he had been compelled to accept of the sovereignty. By this artifice he compassed his design, which was, to get the power and authority, which he had usurped, confirmed to him by the senate and people for the space of 10 years: for he would not accept of it for a longer term, pretending he should in that time be able to settle all things in such peace and order that there would be no further need of his authority; but that he might then ease himself of the burden, and put the government again into the hands of the senate and people. This method he took to render the yoke less heavy; but with a design to renew his lease, if we may be allowed the expression, as soon as the ten years were expired; which he did accordingly from ten years to ten years as long as he lived, all the while governing the whole Roman empire with an absolute and uncontrouled power. With this new authority the senate resolved to distinguish him with a new name. Some of the conscript fathers proposed the name of *Romulus*, thereby to import that he was another founder of Rome; others offered other titles; but the venerable name of *Augustus*, proposed by Manutius Plancus, seemed preferable to all the rest, as it expressed more dignity and reverence than authority, the most sacred things, such as temples, and places consecrated by augurs, being termed by the Romans *Augusta*. Octavianus himself was inclined to assume the name of *Romulus*; but, fearing he should be suspected of affecting the kingdom, he declined it, and took that of *Augustus*, by which we shall henceforth distinguish him.

256
He takes
the title of
Augustus.

Though the whole power of the senate and people was now vested in Augustus, yet, that he might seem to share it with the conscript fathers, he refused to govern all the provinces; assigning to the senate such as were quiet and peaceable; and keeping to himself those which, bordering upon barbarous nations, were most exposed to troubles and wars, saying, He desired the fathers might enjoy their power with ease and safety, while he underwent all the dangers and labours: but, by this politic conduct, he secured all the military power to himself; the troops lying in the provinces he had chosen; and the others, which were governed by the senate, being quite destitute of forces. The latter were called *senatorial*, and the former *imperial*, provinces. O-

Rome.

ver the provinces of both sorts were set men of distinction, to wit, such as had been consuls or prætors, with the titles of *proconsul* and *proprator*; but the government of Egypt was committed to a private knight, Augustus fearing lest a person of rank, depending upon the wealth and situation of that country, might raise new disturbances in the empire. All these governors held their employment only for a year, and were upon the arrival of their successors to depart their provinces immediately, and not fail to be at Rome within three months at the farthest. This division of the provinces was made, according to Ovid, on the ides of January; whereas he was vested by the senate and people with the sovereign power on the seventh of the ides of the same month, as is manifest from the Narbonne marbles; and from that time many writers date the years of his empire. Thus ended the greatest commonwealth, and at the same time began the greatest monarchy, that had ever been known; a monarchy which infinitely excelled in power, riches, extent, and continuance, all the empires which had preceded it.

It comprehended the greatest and by far the best part of Europe, Asia, and Africa, being near 4000 miles in length, and about half as much in breadth. As to the yearly revenues of the empire, they have by a moderate computation been reckoned to amount to forty millions of our money. But the Romans themselves now ran headlong into all manner of luxury and effeminacy. The people were become a mere mob; those who were wont to direct mighty wars, to raise and depose great kings, to bestow or take away potent empires, were so sunk and debauched, that, if they had but bread and shows, their ambition went no higher. The nobility were indeed more polite than in former ages; but at the same time idle, venal, vicious, insensible of private virtue, utter strangers to public glory or disgrace, void of zeal for the welfare of their country, and solely intent on gaining the favour of the emperor, as knowing that certain wealth and preferment were the rewards of ready submission, acquiescence, and flattery. No wonder, therefore, that they lost their liberty, without being ever again able to retrieve it.

257
Extent, &c.
of the Ro-
man em-
pire.

Augustus, now absolute master of the Roman empire, took all methods to ingratiate himself with his soldiers, by whose means he had attained such a height of power. With this view, he dispersed them through different parts of Italy in 32 colonies, that he might the more easily reassemble them on proper occasions. He kept 25 legions constantly on foot, 17 of which were in Europe; viz. eight on the Rhine, four on the Danube, three in Spain, and two in Dalmatia. The other eight were sent into Asia and Africa; four of them being quartered in the neighbourhood of the Euphrates, two in Egypt, and two in Africa Propria, that is, the ancient dominions of Carthage. All these forces, amounting to 170,650 men, were constantly kept on foot by the Roman emperors for several ages. In the neighbourhood of Rome were always quartered 12 cohorts, that is, about 10,000 men; nine of which were called *prætorian cohorts*; the other three, *city cohorts*. These were established as a guard to the emperor, and to maintain peace and tranquillity in the city, but had often a great share in the disturbances which took place throughout the empire. Besides these, Augustus constantly kept at sea two powerful navies; the one riding

258
Military
establish-
ments of
Augustus.

at.

Rome. at anchor near Ravenna in the Adriatic sea, to command Dalmatia, Greece, Cyprus, and the rest of the eastern provinces; the other at Misenum in the Mediterranean, to keep in awe the western parts of the empire. They were likewise to keep the seas clear of pirates, to convey the vessels which brought to Rome the annual tributes from the provinces beyond sea, and to transport corn and other provisions necessary for the relief and subsistence of the city. As to the civil government, Augustus enacted several new laws, and reformed some of the old ones: however, he affected to do nothing without the advice of the senate; who were so well pleased with the complaisance showed them on all occasions, that to the rest of his titles they added that of *Pater Patriæ*, or "Father of his Country."

And now Augustus having settled all things with regard to the civil and military establishments of the empire, turned his arms against the Spanish nations called the *Cantabrians* and *Asturians*, who had never been fully subdued. The war, however, terminated as usual, in favour of the Romans; and these brave nations were forced to receive the yoke, though not without the most violent resistance on their part, and the utmost difficulty on that of the Romans (See *ASTURIA*).

259
His friendship
courted by the
kings of
Parthia and
India.

By this and his other conquests the name of Augustus became so celebrated, that his friendship was courted by the most distant monarchs. Phraates king of Parthia consented to a treaty with him upon his own terms, and gave him four of his own sons with their wives and children as hostages for the performance of the articles; and as a further instance of his respect, he delivered up the Roman eagles and other ensigns which had been taken from Crassus at the battle of Carrhæ. He received also an embassy from the king of India, with a letter written in the Greek tongue, in which the Indian monarch informed him, that "though he reigned over 600 kings, he had so great a value for the friendship of Augustus, that he had sent this embassy on so long a journey on purpose to desire it of him; that he was ready to meet him at whatsoever place he pleased to appoint; and that, upon the first notice, he was ready to assist him in whatever was right." This letter he subscribed by the name of *Porus king of India*. Of the ambassadors who set out from India, three only reached the presence of Augustus, who was at that time in the island of Samos, the others dying by the way. Of the three survivors one was named *Zarmar*, a gymnosophist, who followed the emperor to Athens, and there burnt himself in his presence; it being customary for the gymnosophists to put an end to their lives in this manner, when they thought they had lived long enough, or apprehended some misfortune. Soon after this the Roman dominions were extended southward over the *Garamantes*, a people whose country reached as far as the river Niger. All this time the emperor continued to make new regulations for the good of the state; and among other things caused the Sibylline oracles to be reviewed. Many of these he rejected; but such as were reckoned authentic, he caused to be copied by the pontifices themselves, and lodged them in golden cabinets, which he placed in the temple of Apollo, built by him in his palace.

The Roman empire had now extended itself so far, that it seemed to have arrived at the limits prescribed to it by nature; and as soon as this was the case, it

began to be attacked by those nations which in process of time were to overthrow it. The Germans, by which name the Romans confounded a great number of nations dwelling in the northern parts of Europe, began to make incursions into Gaul. Their first attempt happened in the year 17 B. C. when they at first gained an inconsiderable advantage, but were soon driven back with great loss. Soon after this the *Rhæti*, who seem to have inhabited the country bordering on the lake of Constance, invaded Italy, where they committed dreadful devastations, putting all the males to the sword without distinction of rank or age; nay, we are told, that, when women with child happened to fall into their hands, they consulted their augurs whether the child was male or female; and if they pronounced it a male, the mother was immediately massacred. Against these barbarians Augustus sent Drusus the second son of the empress Livia; who, though very young, found means to gain a complete victory with very little loss on his part. Those who escaped took the road to Gaul, being joined by the *Vindelici*, another nation in the neighbourhood; but Tiberius, the elder brother of Drusus, marched against them, and overthrew them so completely, that the *Rhæti*, *Vindelici*, and *Norici*, three of the most barbarous nations in those parts, were fain to submit to the pleasure of the emperor. To keep their country in awe, Tiberius planted two colonies in *Vindelicia*, opening a road from thence into *Noricum* and *Rhætia*. One of the cities which he built for the defence of his colonies was called *Drysumagus*; the other, *Augusta Vindelicorum*; both of which are now known by the names of *Nimingen* and *Augsburg*.

Augustus, who had long since obtained all the temporal honours which could well be conferred upon him, now began to assume those of the spiritual kind also; being in the year 13 B. C. created Pontifex Maximus: an office which he continued to hold till his death; as did also his successors till the time of Theodosius. By virtue of this office he corrected a very gross mistake in the Roman calendar; for the pontifices having, for the space of 36 years, that is, ever since the reformation by Julius Cæsar, made every third year a leap year, instead of every fourth, twelve days had been inserted instead of nine, so that the Roman year consisted of three days more than it ought to have done. These three superfluous days having been thrown out, the form of the year has ever since been regularly observed, and is still known by the name of the *old style* in use among us. On this occasion he gave his own name to the month of August, as Julius Cæsar had formerly done to the month of July.

In the year 11 B. C. Agrippa died, and was succeeded in his high employment of governor of Rome by Tiberius; but, before investing him with this ample power, the emperor caused him to divorce his wife Agrippina (who had already brought him a son, and was then big with child), in order to marry Julia the widow of Agrippa and daughter of the emperor. Julia was a princess of an infamous character, as was known to almost every body excepting Augustus himself; however, Tiberius made no hesitation, through fear of disobliging the emperor.

The emperor now sent his two sons Tiberius and Drusus against the northern nations. Tiberius reduced

Rome,
260
The empire
invaded by
the northern
barbarians.

261
Augustus
created
pontifex
maximus.

262
Tiberius
succeeds A-
grippa.

Rome.

Rome.

263
Desires
leave to re-
tire to
Rhodes.

ced the Pannonians, who had attempted to shake off the yoke after the death of Agrippa. Drusus performed great exploits in Germany; but while he was considering whether he should penetrate further into these northern countries, he was seized with a violent fever, which carried him off in a few days. He was succeeded in his command by Tiberius, who is reported to have done great things, but certainly made no permanent conquests in Germany. However, he was honoured with a triumph, and had the tribunitial power for five years conferred upon him; which was no sooner done, than, to the great surprise of Augustus and the whole city, he desired leave to quit Rome and retire to Rhodes. Various reasons have been assigned for this extraordinary resolution: some are of opinion that it was in order to avoid being an eye-witness of the debaucheries of his wife Julia, who set no bounds to her lewdness; though others imagine that he was offended at the honours which Augustus had conferred on his grandchildren, especially at his styling them *princes of the Roman youth*; which left him no hopes of enjoying the sovereign power. However, Augustus positively refused to comply with his request, and his mother Livia used her utmost endeavours to dissuade him from his resolution: but Tiberius continued obstinate; and finding all other means ineffectual, at last shut himself up in his house, where he abstained four whole days from nourishment. Augustus, perceiving that he could not get the better of his obstinate and inflexible temper, at last complied with his request. Tiberius soon grew weary of his retirement, and, giving out that he had left Rome only to avoid giving umbrage to the emperor's two grandchildren, desired leave to return; but Augustus was so much displeased with his having obstinately insisted on leaving Rome, that he obliged him to remain at Rhodes for seven years longer. His mother, with much ado got him declared the emperor's lieutenant in those parts; but Tiberius, dreading the resentment of his father-in-law, continued to act as a private person during the whole time of his stay there.

264
Is confined
there by
Augustus
for seven
years.

A profound peace now reigned throughout the whole empire; and in consequence of this the temple of Janus was shut, which had never before happened since the time of Numa Pompilius. During this pacific interval, the Saviour of mankind was born in Judæa, as is recorded in the sacred history, 748 years after the foundation of Rome by Romulus. Three years after, Tiberius returned to the city, by permission of Augustus, who yet would not allow him to bear any public office; but in a short time, Lucius Cæsar, one of the emperor's grandchildren, died, not without suspicions of his being poisoned by Livia. Tiberius showed such great concern for his death, that the affection of Augustus for him returned; and it is said that he would at that time have adopted Tiberius, had it not been for giving umbrage to his other grandson Caius Cæsar. This obstacle, however, was soon after removed; Caius being taken off also, not without great suspicions of Livia, as well as in the former case. Augustus was exceedingly concerned at his death, and immediately adopted Tiberius as his son; but adopted also Agrippa Posthumus, the third son of the famous Agrippa; and obliged Tiberius to adopt Germanicus the son of his brother Drusus, though he had a son of his own named *Drusus*; which was a great mortifica-

265
Birth of
Christ.

266
Augustus
adopts Ti-
berius as his
son.

tion to him. As to Agrippa, however, who might have been an occasion of jealousy, Tiberius was soon freed from him, by his disgrace and banishment, which very soon took place, but on what account is not known.

The northern nations now began to turn formidable: and though it is pretended that Tiberius was always successful against them, yet about this time they gave the Romans a most terrible overthrow; three legions and six cohorts, under Quintilius Varus, being almost entirely cut in pieces. Augustus set no bounds to his grief on this fatal occasion. For some months he let his hair and beard grow, frequently tearing his garments, knocking his head against the wall, and crying out like a distracted person, "Restore the legions, Varus!" Tiberius, however, was soon after sent into Germany; and for his exploits there he was honoured with a triumph. Augustus now took him for his colleague in the sovereignty; after which he sent Germanicus against the northern barbarians, and Tiberius into Illyricum. This was the last of his public acts; for having accompanied Tiberius for part of his journey, he died at Nola in Campania, in the 76th year of his age, and 56th of his reign. Livia was suspected of having hastened his death by giving him poisoned figs. Her reason for this was, that she feared a reconciliation between him and his grandson Agrippa whom he had banished, as we have already related. Some months before, the emperor had paid a visit to Agrippa, unknown to Livia, Tiberius, or any other person, excepting one Fabius Maximus. This man, on his return home, discovered the secret to his wife, and she to the empress. Augustus then perceiving that Fabius had betrayed him, was so provoked, that he banished him from his presence for ever; upon which the unfortunate Fabius, unable to survive his disgrace, laid violent hands on himself.

267
Death of
Augustus.

Tiberius, who succeeded to the empire, resolved to secure himself on the throne by the murder of Agrippa; whom accordingly he caused to be put to death by a military tribune. Though this might have been a sufficient evidence of what the Romans had to expect, the death of Augustus was no sooner known, than the consuls, senators, and knights, to use the expression of Tacitus, ran headlong into slavery. The two consuls first took an oath of fidelity to the emperor, and then administered it to the senate, the people, and the soldiery. Tiberius behaved in a dark mysterious manner, taking care to rule with an absolute sway, but at the same time seeming to hesitate whether he should accept the sovereign power or not; insomuch that one of the senators took the liberty to tell him, that other men were slow in performing what they had promised, but he was slow in promising what he had already performed. At last, however, his modesty was overcome, and he declared his acceptance of the sovereignty in the following words: "I accept the empire, and will hold it, till such time as you, conscript fathers, in your great prudence, shall think proper to give repose to my old age."

268
Disimulation
of Tiberius.

Tiberius had scarce taken possession of the throne, when news were brought him that the armies in Pannonia and Germany had mutinied. In Pannonia, three legions having been allowed some days of relaxation from their usual duties, either to mourn for the death of Augustus, or to rejoice for the accession of Tiberius, grew turbulent and seditious. The Pannonian muti-

269
Revolt of
the Panno-
nian and
German le-
gions.

neers

Rome.

neers were headed by one Percennius, a common soldier; who, before he served in the army, had made it his whole business to form parties in the theatres and playhouses to hiss or applaud such actors as he liked or disliked. Inflamed by the speeches of this man, they openly revolted; and though Tiberius himself wrote to them, and sent his son Drusus to endeavour to quell the tumult, they massacred some of their officers, and insulted others, till at last, being frightened by an eclipse of the moon, they began to show some signs of repentance. Of this favourable disposition Drusus took advantage; and even got the ringleaders of the revolt condemned and executed. Immediately after this they were again terrified by such violent storms and dreadful rains, that they quietly submitted, and every thing in that quarter was restored to tranquillity.

The revolt of the German legions threatened much more danger, as they were more numerous than those of Pannonia. They proceeded nearly in the same way as the Pannonian legions, falling upon their officers, especially the centurions, and beating them till they almost expired, drove them out of the camp, and some of them were even thrown into the Rhine. Germanicus, who was at that time in Gaul, hastened to the camp on the first news of the disturbance; but being unable to prevail on them to return to their duty, he was obliged to feign letters from Tiberius, granting all their demands. These were, That all those who had served 20 years should be discharged; that such as had served 16 should be deemed veterans; and that some legacies which had been left them by Augustus should not only be paid immediately, but doubled. This last article he was obliged to discharge without delay out of the money which he and his friends had brought to defray the expences of their journey; and on receiving it, the troops quietly retired to their winter-quarters. But, in the mean time, some deputies sent either by Tiberius or the senate, probably to quell the sedition, occasioned fresh disturbances; for the legionaries, taking it into their heads that these deputies were come to revoke the concessions which Germanicus had made, were with difficulty prevented from tearing them in pieces; and, notwithstanding the utmost endeavours of Germanicus, behaved in such an outrageous manner, that the general thought proper to send off his wife Agrippina, with her infant son Claudius, the herself at the same being big with child. As she was attended by many women of distinction, wives of the chief officers in the camp, their tears and lamentations in parting with their husbands occasioned a great uproar, and drew together the soldiers from all quarters. A new scene ensued, which made an impression even upon the most obstinate. They could not behold, without shame and compassion, so many women of rank travelling thus forlorn, without a centurion to attend them, or a soldier to guard them; and their general's wife among the rest, carrying her infant child in her arms, and preparing to fly for shelter against the treachery of the Roman legions. This made such a deep impression on the minds of many of them, that some ran to stop her, while the rest recurred to Germanicus, earnestly intreating him to recall his wife, and to prevent her from being obliged to seek a sanctuary among foreigners. The general improved this favourable disposition, and in a short time they of their own accord seized and

massacred the ringleaders of the revolt. Still, however, two of the legions continued in their disobedience. Against them therefore Germanicus determined to lead those who had returned to their duty. With this view he prepared vessels; but before he embarked his troops, he wrote a letter to Cæcina who commanded them, acquainting him that he approached with a powerful army, resolved to put them all to the sword without distinction, if they did not prevent him by taking vengeance on the guilty themselves. This letter Cæcina communicated only to the chief officers and such of the soldiers as had all along disapproved of the revolt, exhorting them at the same time to enter into an association against the seditious, and put to the sword such as had involved them in the present ignominy and guilt. This proposal was approved of, and a cruel massacre immediately took place; insomuch that when Germanicus came to the camp, he found the greatest part of the legions destroyed. This greatly affected the humane Germanicus, who caused the bodies of the slain to be burnt, and celebrated their obsequies with the usual solemnities; however, the sedition was thus effectually quelled, after which he led his army into Germany. There he performed many great exploits; but still all that he could perform was far from freeing the empire from so dangerous and troublesome an enemy. In the year 19, he died, of poison, as was supposed, given by Piso, his partner in the government of Syria, to which Germanicus had been promoted after his return from the north.

In the mean time, Tiberius, though he affected to court the favour of the people by various methods, yet showed himself in general such a cruel and blood-thirsty tyrant, that he became the object of universal abhorrence. Though he had hated Germanicus in his heart, he punished Piso with death; but in about a year after the death of Germanicus, having now no object of jealousy to keep him in awe, he began to pull off the mask, and appear more in his natural character than before. He took upon himself the interpretation of all political measures, and began daily to diminish the authority of the senate; which design was much facilitated, by their own aptitude to flattery; so that he despised their meanness, while he enjoyed its effects. A law at that time subsisted, which made it treason to form any injurious attempt against the majesty of the people. Tiberius assumed to himself the interpretation and enforcement of this law; and extended it not only to the cases which really affected the safety of the state, but to every conjuncture that could possibly be favourable to his hatred or suspicions. All freedom was now therefore banished from convivial meetings, and diffidence reigned amongst the dearest relations. The law of offended majesty being revived, many persons of distinction fell a sacrifice to it.

In the beginning of these cruelties, Tiberius took into his confidence Sejanus, a Roman knight, but by birth a Volscian, who found out the method of gaining his confidence, by the most refined degree of dissimulation, being an over-match for his master in his own arts. He was made by the emperor captain of the Prætorian guards, one of the most confidential trusts in the state, and extolled in the senate as a worthy associate in his labours. The servile senators, with

Rome.

270
The revolt
quelled by
a dreadful
massacre.

† See Ger-
many.

271
Tiberius a
cruel ty-
rant.

272
Rise of
Sejanus a
wicked mi-
nister.

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6/95

Encyclopaedia britannica or a dictionary of arts, sciences and
miscellaneous literature

Bd.: 16,1

Edinburgh (1810)

4 Enc. 7-16,1

urn:nbn:de:bvb:12-bsb10351520-9